

# Deltares

Enabling Delta Life



# Deltares

Enabling Delta Life

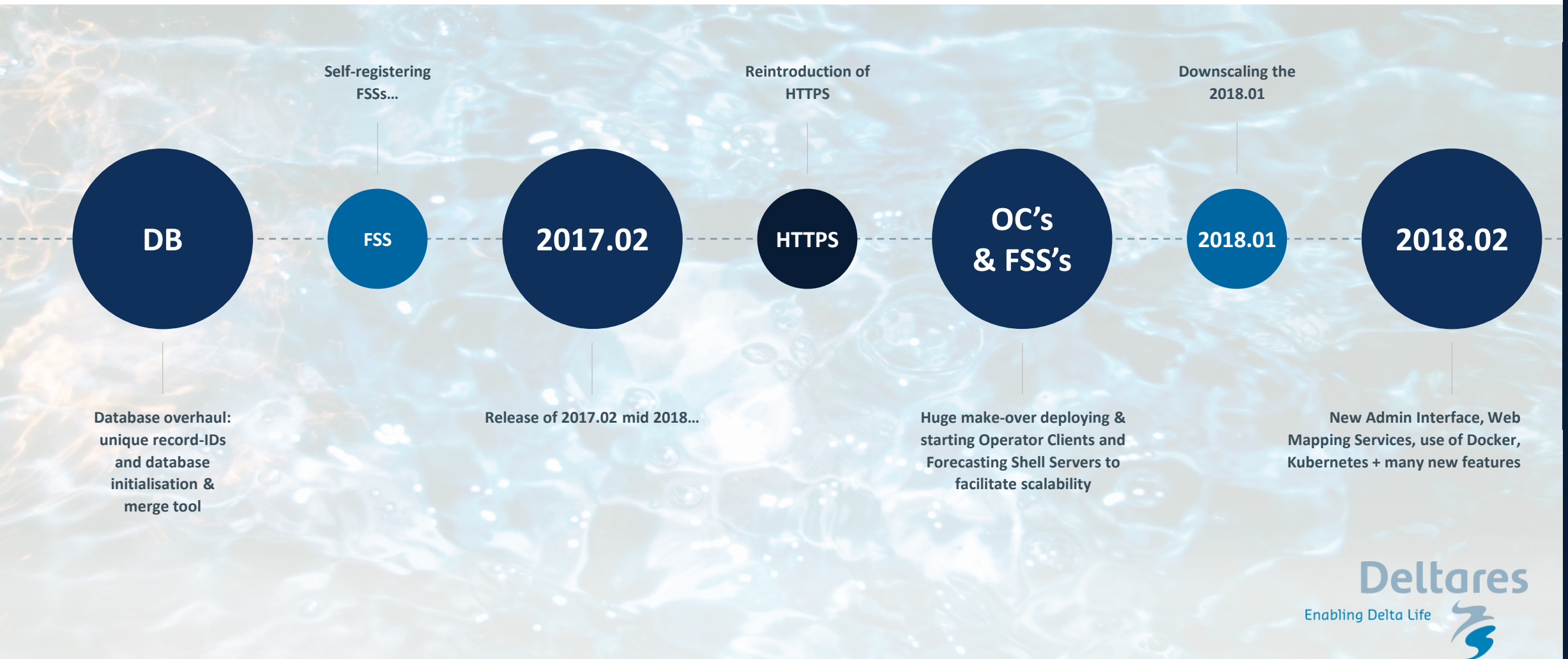


**What's new in Delft-FEWS...**

Marcel Ververs (Delft-FEWS Product Manager)

Delft-FEWS North American User Days 2019

## Time line of a 'very exiting and an exceptional year...'



## Delft-FEWS in 2018: It's been a challenge...

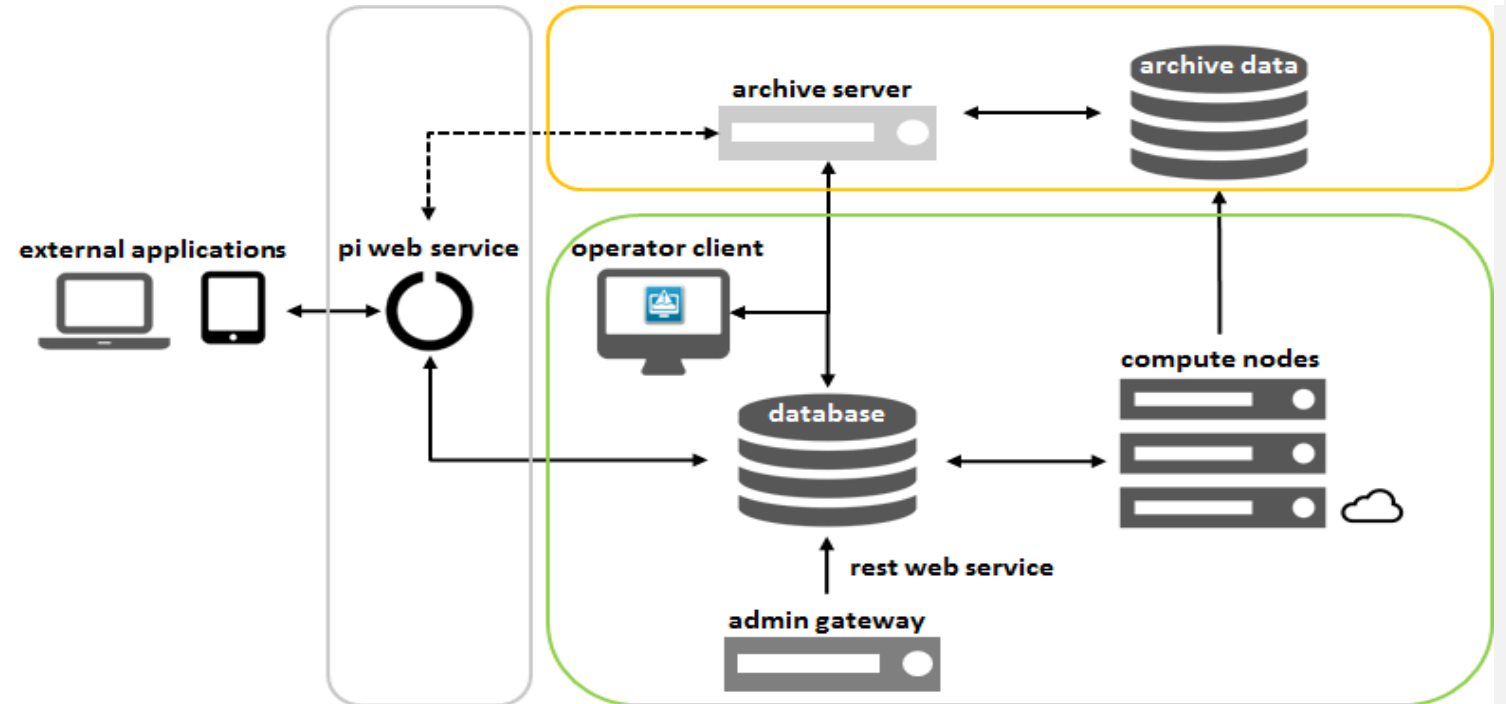
- Implementing the Delft-FEWS 2020 roadmaps AND doing all the implementation projects AND developing the regular features requests felt like...

**“Visiting the DIY store and replace all the plumbing, heating and electricity cables in the (Delft-FEWS) house and avoiding a hot water toilet flush, preventing the shower to electrocute you and making sure the kitchen wastewater does not end up in your bath tube...”**

**And all this while the (Delft-FEWS) house was being lived and slept in...and oh not to forget, the WIFI should be on 100% of the time (for the kids)....**

# Delft-FEWS 2020: Status update of the roadmaps...

- Update per roadmap (1<sup>st</sup> of March 2019)
  - What is ready, what is not (yet)?
  - Next steps



Roadmap Delft-FEWS backend

Roadmap Delft-FEWS PI webservice

Roadmap Deltares Open Archive

# Roadmap Backend features - planned

2017.02	2018.01	2018.02
JMS removed		
New MC		
New Database Schema		
Current Admin Interface adjusted	New Admin Interface	
New (MC-MC) Synchronisation		New Admin Interface webservice
New RollingBarrel		
	Secure login/https	
	Scalability	Improved scalability
	Cloud-ready: Azure	Cloud-ready Amazon
	Improved security	
New install procedure	Improved install procedure	(almost) Automatic install procedure
New upgrade procedure	Improved upgrade procedure	(almost) Automatic upgrade procedure
New (WIKI) documentation		Automatic system documentation

# Roadmap Backend features - realised

2017.02	2018.01	2018.02
JMS removed		
New MC		Prepare integration MC/AI
New Database Schema		
Current Admin Interface adjusted		New Admin Interface
New (MC-MC) Synchronisation		New Admin Interface webservice
New RollingBarrel		
	Secure login/https	
	Basic Scalability	Improved scalability
	Cloud-preparation Azure	Cloud-ready Azure
	Improved security	Cloud-ready Amazon
New install procedure	Improved install procedure	Simplified install procedure
New upgrade procedure	Improved upgrade procedure	Simplified upgrade procedure
New (WIKI) documentation		



## More Backend ...


- Only Database & Tomcat needed
- Database functionality now ensures uniqueness of database records
- MC/AI in one (Tomcat) file
- FSS is self-registering, FSS ID generated for scalability
- Use of Docker/Kubernetes possible
- Delft-FEWS base build has Java *inside* (windows & linux)
- OC points to URL (no initial root config)
- OC (FSS) Patch now determines build
- 64b only






# New Admin Interface


- New look & feel
- New technologies (HTML5, etc.)
- Responsive GUI (tablet, phone)
- AI web service (system admin tooling)
- Roles (Admin, View)
- Import Base Build
- Security
- Documentation

 Delft-FEWS Admin Interface

Dashboard


- System Status <
- Files <
- Forecast Tasks <
- Workflow and FSSs <
- User Administration <
- System Control <
- Database Analysis <
- Configuration Management <
- Examples <
- Logout admin

 **Deltares**  
Enabling Delta Life



OK  
MC01 Database

View Details




26  
Error Logs last hour


View Details

FSS Status

MC ID	FSS ID	Status	Last Workflow Status	Last Run Work
COREMC00	FSS01	Failed	Unknown	Update_System
COREMC00	FSS02	Failed	unknown	ImportExternal
COREMC00	FSS03	OK	unknown	Ovens_Rainfa

MC Components status

 Task Run Manager Status OK

 MC Rolling Barrel Status

## Roadmap PI-webservice features - planned

2017.02	2018.01	2018.02
Simplify installation and configuration	Option in installation procedure Delft-FEWS	Part of install procedure Delft-FEWS (optional)
Improved testability	Improved performance and stability	
PI-XML SOAP/REST alignment	Data streaming/chunking/thinning	
	Improved security and authentication	
	JSON Support	
		Seamless integration of grid data
		Web Mapping Tile Service (WMTS)
Improved documentation	Improved documentation	Improved documentation

# Roadmap PI-webservice features - realised

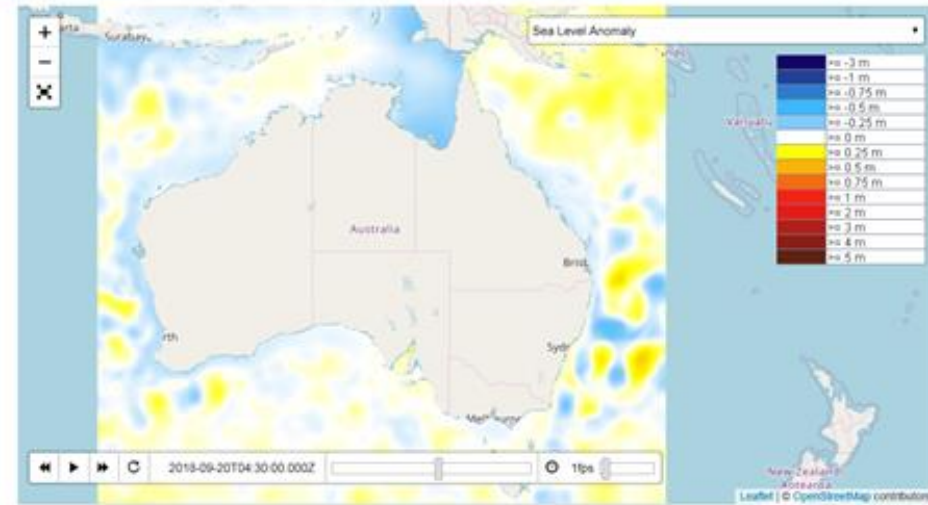
2017.02	2018.01	2018.02
Simplify installation and configuration	Option in installation procedure Delft-FEWS	Part of install procedure Delft-FEWS (optional)
Improved testability	Improved performance and stability	
PI-XML SOAP/REST alignment		Data streaming/chunking/thinning
Improved security and authentication		
JSON Support		
		Seamless integration of grid data
		Web Mapping Tile Service (WMS-T)
Improved documentation	Improved documentation	Improved documentation

# More PI webserver...

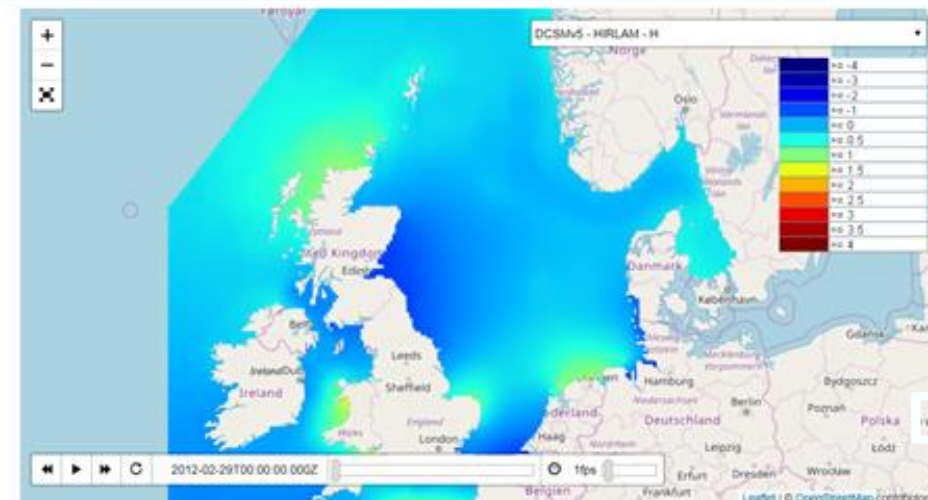
- WMS-T (T=time)
- Plots from the Spatial Display
- Testpage (included in package)
- Applied in projects (e.g. Covadem, ADOOS)
- Comparison with Spatial Display (refresh rate, animation) on the next slide



## Delft-FEWS Web Mapping Service (WMS-T)

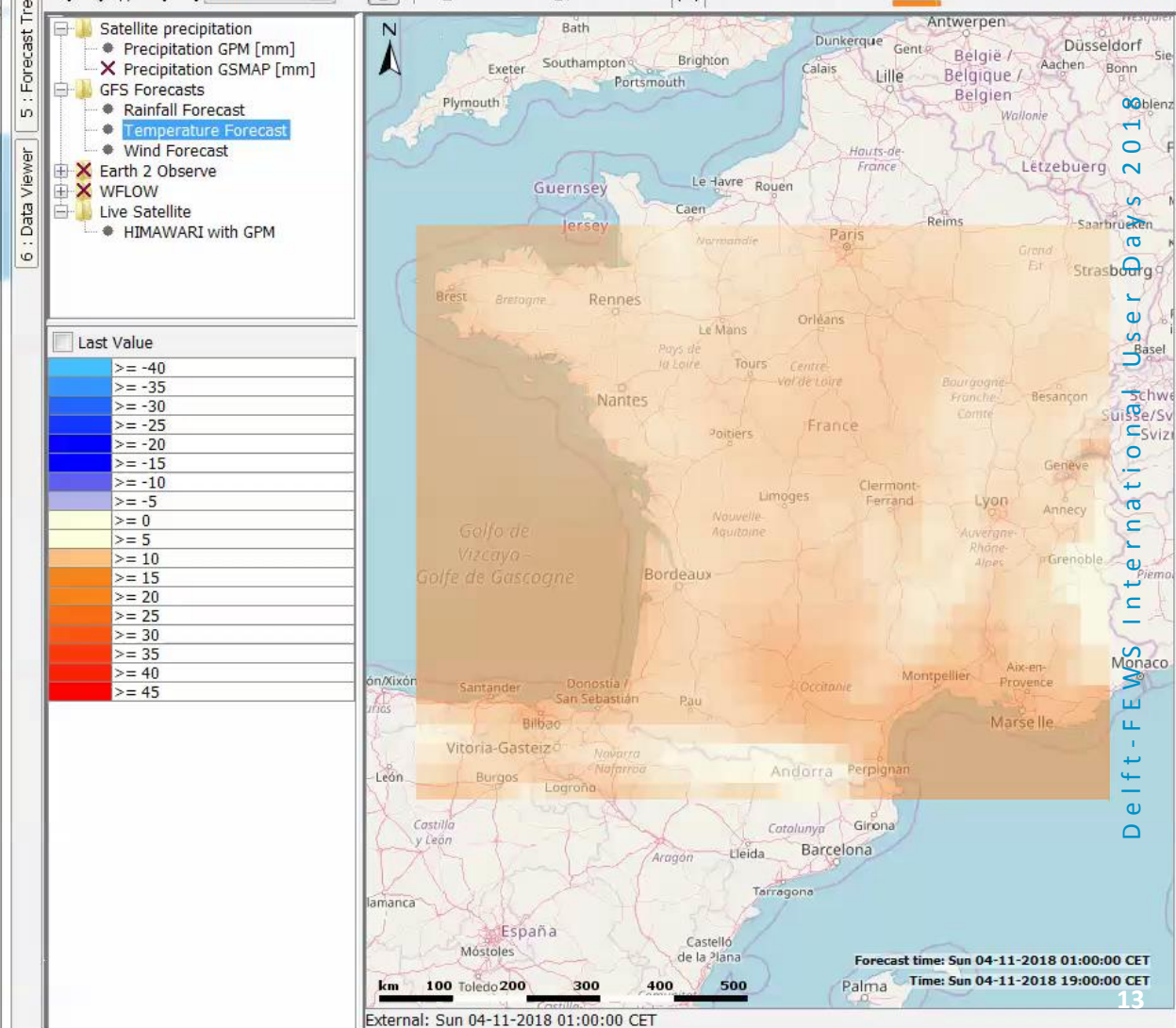
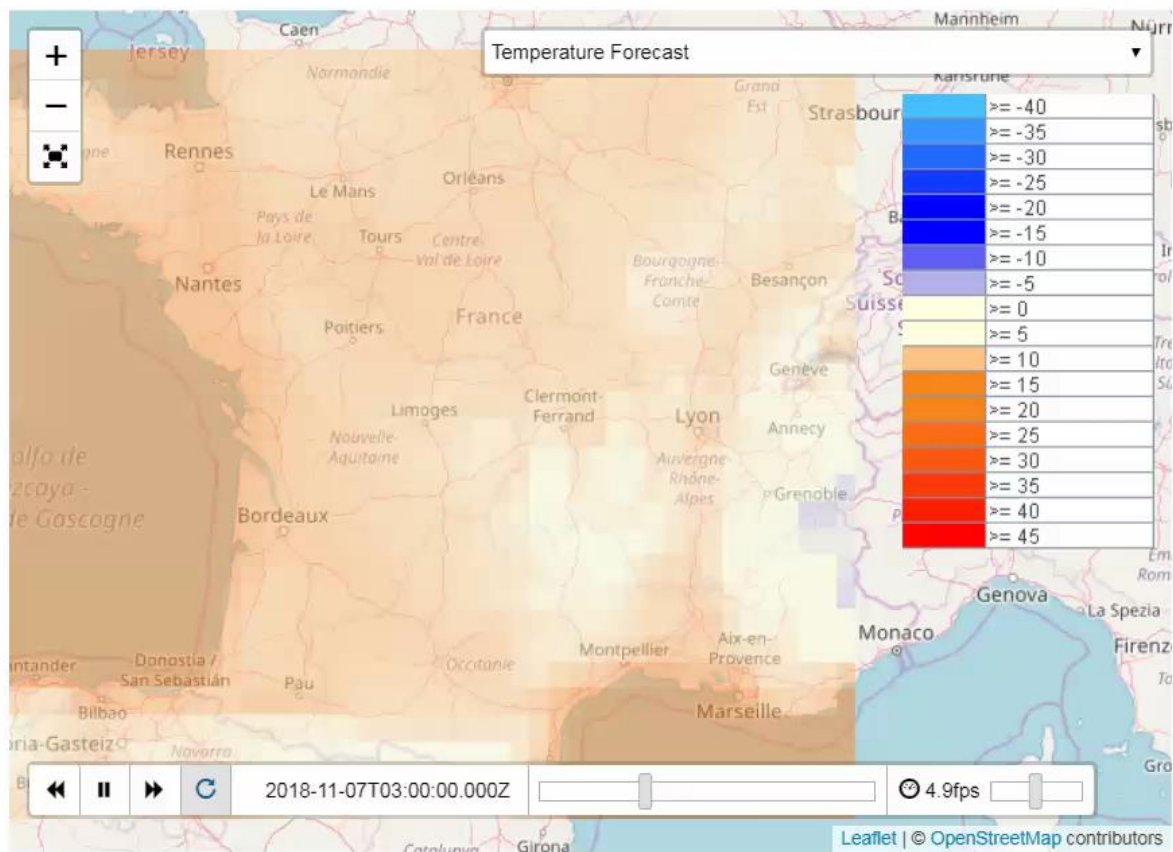


## Delft-FEWS Web Mapping Service (WMS-T)





## (WMS-T)



## Roadmap Open archive features - planned

2017.02	2018.01	2018.02
PI Webservice for Open Archive		
Improved harvester		Harvester for non-FEWS data
	Improved Data management Tool	Example implementation Deltares Data Viewer
	Health Checker	
Search & select forecasts/seamless integration	Search & select forecasts/seamless integration	
Improved documentation	Improved documentation	Improved documentation
Course materials		
	Restyled System Admin Page	
Improved installer	Option in installation procedure Delft-FEWS	Option in installation procedure Delft-FEWS

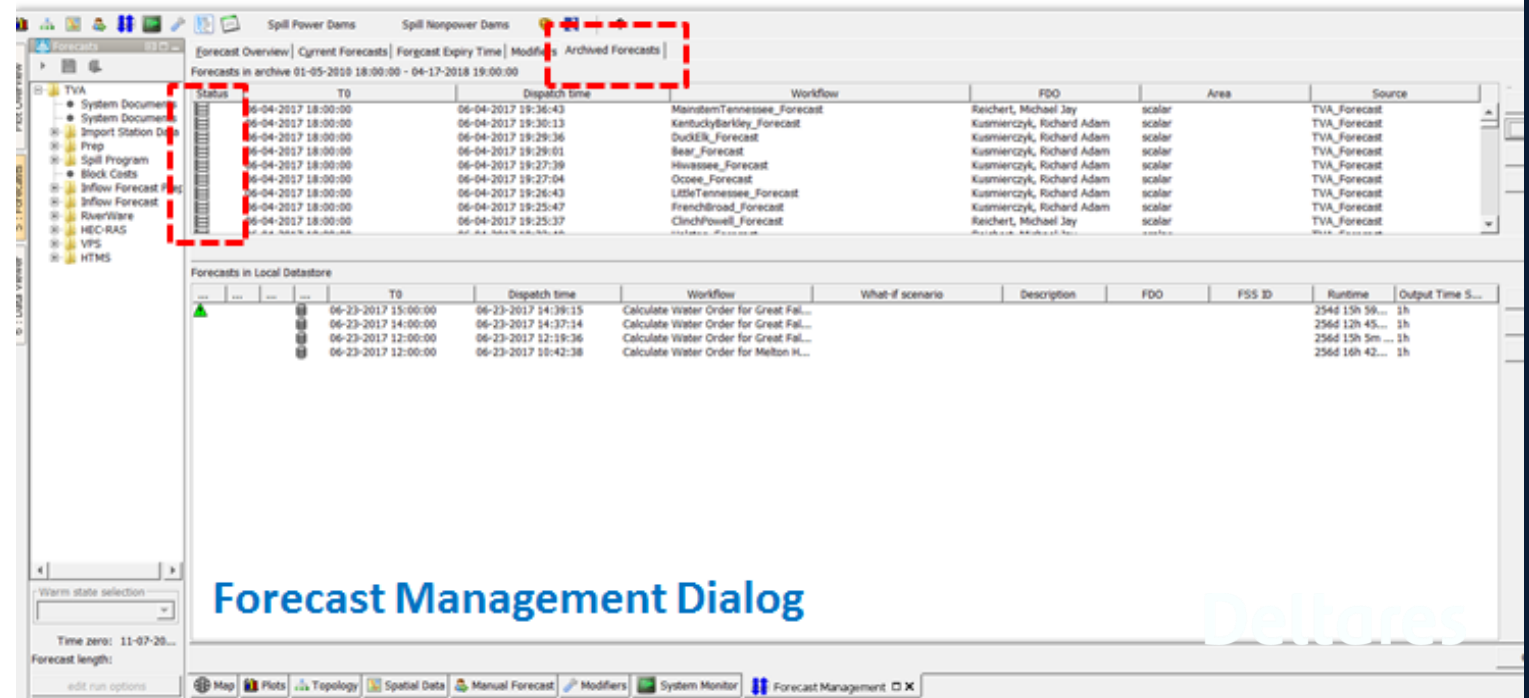
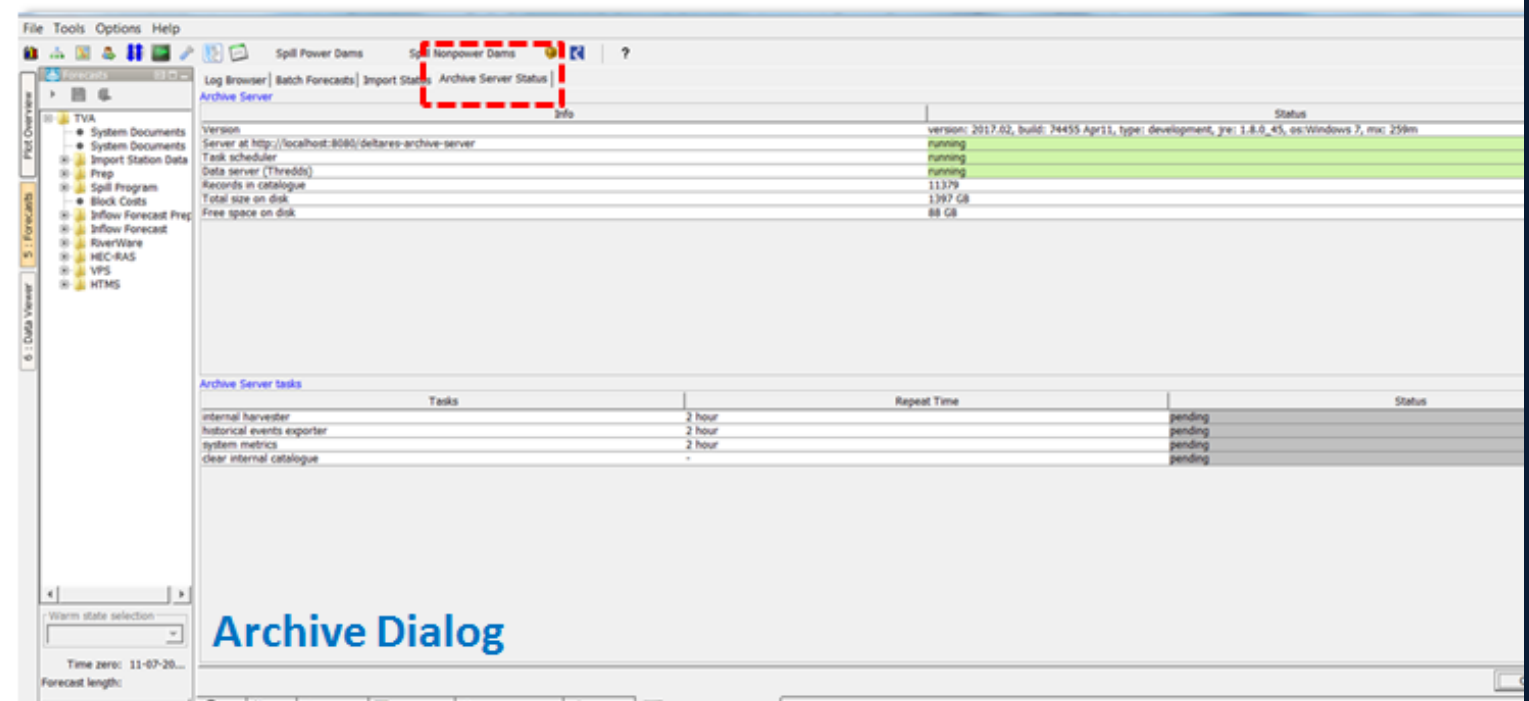


# Roadmap Open archive features - realised

2017.02	2018.01	2018.02
PI Webservice for Open Archive		
Improved harvester		Harvester for non-FEWS data
Improved Data management Tool		Example implementation Deltares Data Viewer (Delft-FEWS web viewer)
Health Checker		
Search & select forecasts/seamless integration		
Improved documentation	Improved documentation	Improved documentation
Course materials		New Elasticsearch version
	Restyled System Admin Page	
Improved installer	Option in installation procedure Delft-FEWS	Option in installation procedure Delft-FEWS

# More Open archive...

- Archive more integrated in OC
  - Archive Catalog Display (Query)
  - Forecast Management Display
  - Status bar
  - System Monitor
  - Verification Display (flood events)
- And accessible via PI webservice:
  - Ensemble Verification System
  - TVA SSRS system
- Admin page improved



# Remaining roadmap features – 2019 (in projects...)

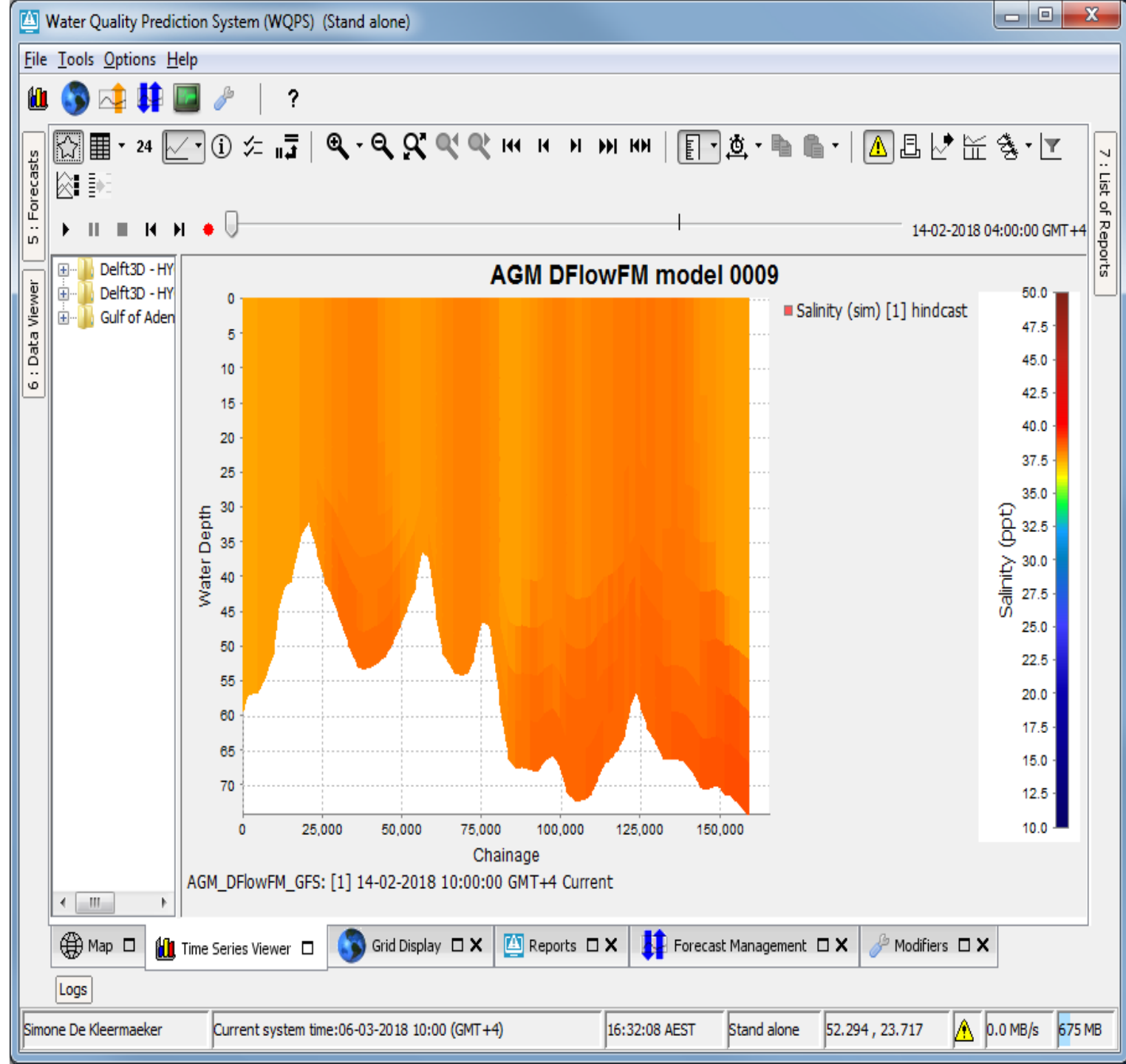
2019.0* - Backend
Full integration MC/AI
Finalise security
(almost) Automatic install procedure
(almost) Automatic upgrade procedure
Automatic system documentation

2019.0* – PI web service
Seamless integration of grid data
Finalize security
WMTS / improve WMS-T

2019.0* - Open archive
Seamless Integration for grids
Delft-FEWS web viewer based on PI web service
Harvester for non-FEWS data

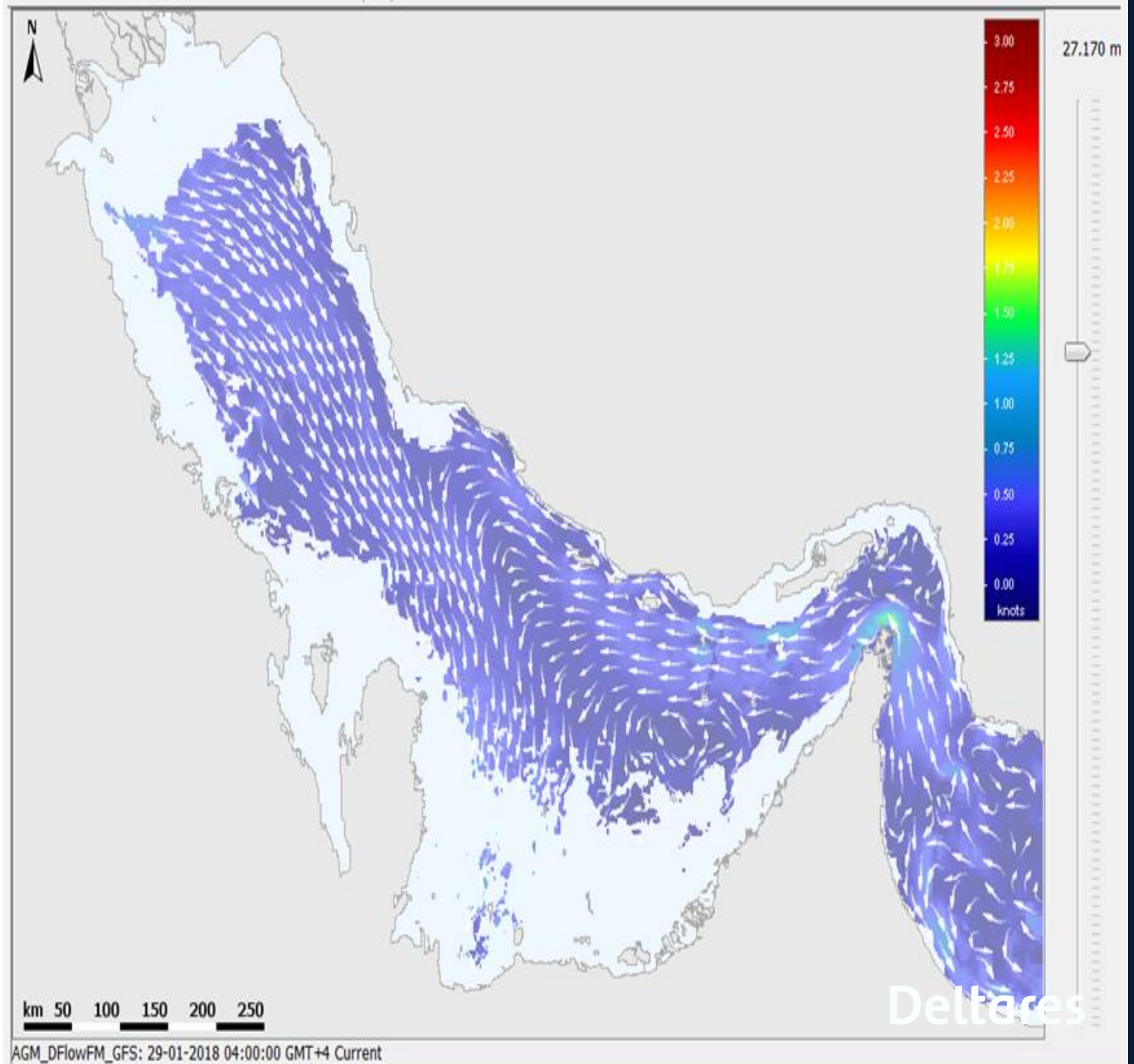
# Cross section plot

- Display 3D model data results
- User defined cross section in spatial display
- Parameter in vertical profile (e.g. salinity over water depth)
- Animation over time



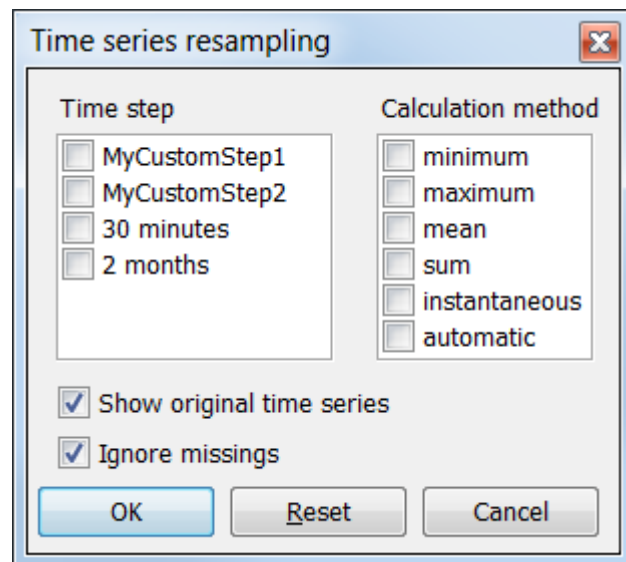
## Vertical slider for 3D

- Spatial display has vertical slider
  - Shows 2D data at different depths
  - Dynamic interpolation for time step
  - Both Sigma layers and Z layers
- (e.g. Delft3D-FLOW or D-Flow FM grids)

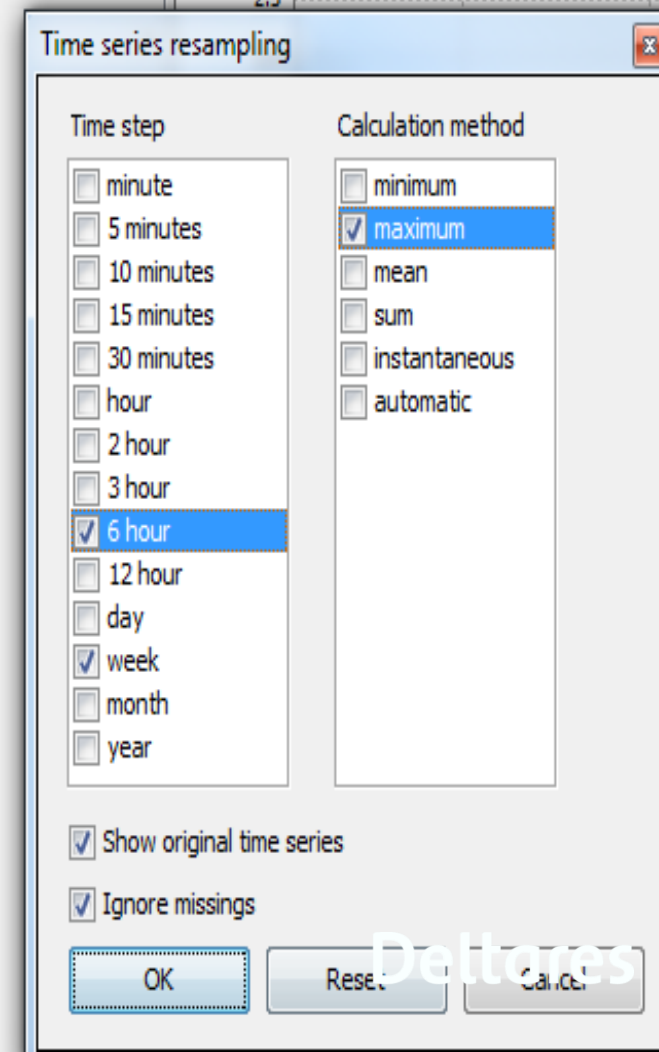
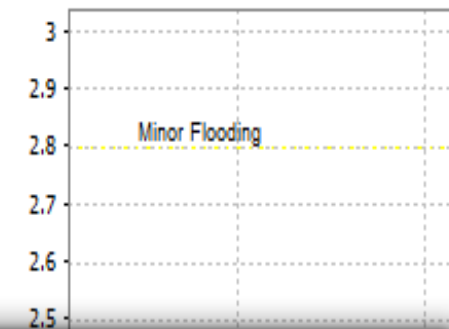


# Resampling custom period

- Custom time steps in TimeSeriesDisplayConfig
- Custom start time accumulation period
- Time steps defined in TimeSteps.xml can be used



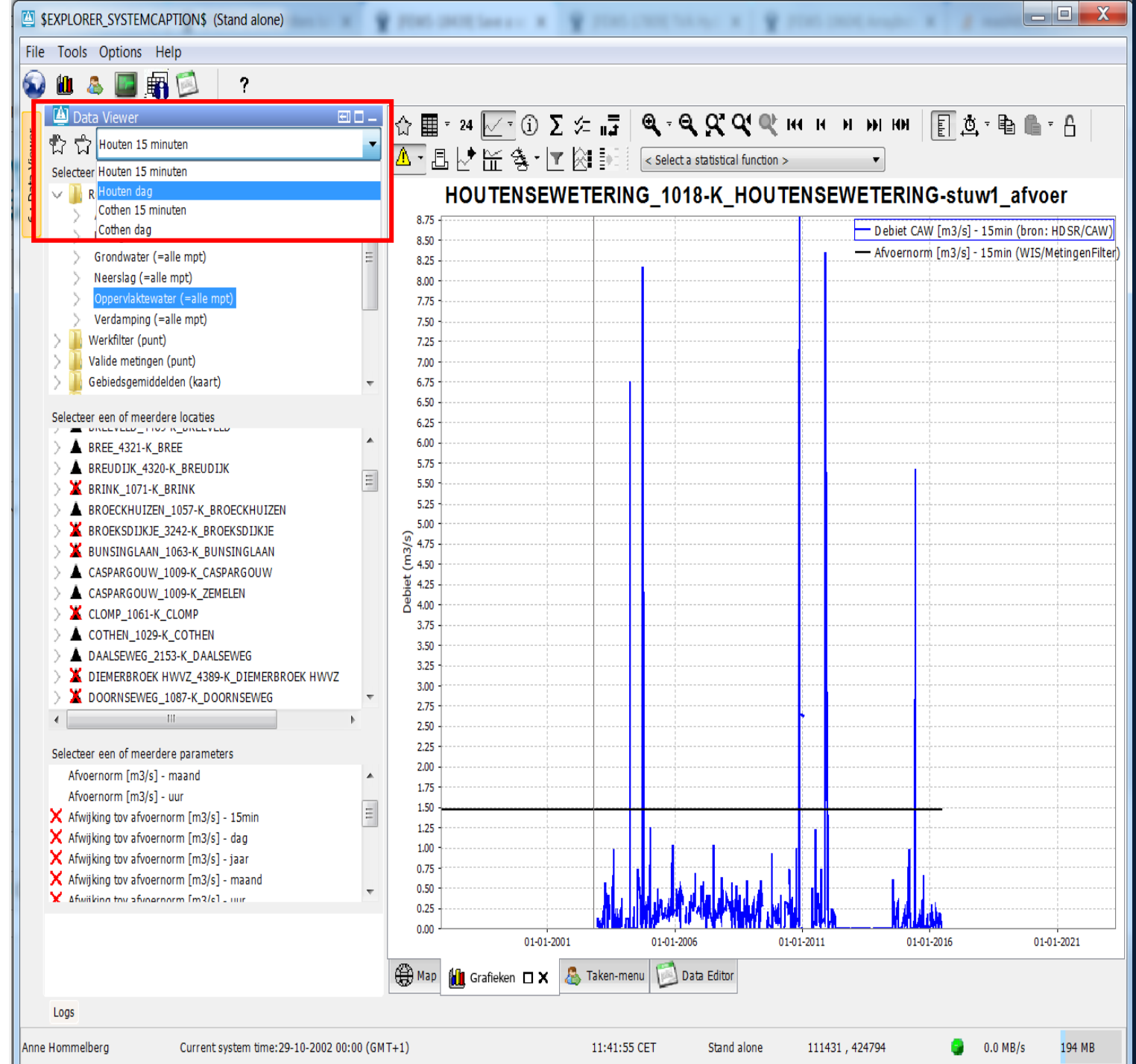
	A	B	C
	H_obs (m)	H_obs (m)	H_obs (m)
	opo	opo	opo
	401216A - Joker: R_401216A	401216A - Joker: R_401216A	401216A - Joker: R_401216A
	ProcessHopo	ProcessHopo	ProcessHopo
		MAXIMUM (6 hou	MAXIMUM (week
Mon,27-03-2017 06:00		0.910	
Mon,27-03-2017 08:00	0.886		
Mon,27-03-2017 12:00		1.012	
Mon,27-03-2017 18:00		0.886	
Tue,28-03-2017 00:00		0.886	
Tue,28-03-2017 06:00		0.886	
Tue,28-03-2017 08:00	1.012		
Tue,28-03-2017 12:00		1.012	
Tue,28-03-2017 18:00		1.012	
Wed,29-03-2017 00:00		1.012	
Wed,29-03-2017 06:00		1.012	
Wed,29-03-2017 08:00	0.904		
Wed,29-03-2017 12:00		0.904	
Wed,29-03-2017 18:00		0.904	
Thu,30-03-2017 00:00		0.904	1.012
Thu,30-03-2017 06:00		0.904	
Thu,30-03-2017 08:00	0.880		
Thu,30-03-2017 12:00		0.880	
Thu,30-03-2017 18:00		0.880	
Fri,31-03-2017 00:00		0.880	
Fri,31-03-2017 06:00		0.880	
Fri,31-03-2017 08:00	0.879		
Fri,31-03-2017 12:00		0.879	
Fri,31-03-2017 18:00		0.879	





# Save graph as Favourite

- Each user has its own favourite graphs
- Dataviewer has option to save favourites
- Saved in user\_settings
- Available in next session(s)
- Toolbar can be hidden / shown



# Copy set of modifiers

- Copy modifiers to other scenarios
- Time series modifiers copied to another moduleInstanceId
- Under right mouse button → menu option to choose scenario

The screenshot displays the Delft3D software interface. At the top, a table lists various modifiers with columns: Mod type, Name, Summary, Co..., Det..., Re..., Sta..., W..., Loc..., Start, End, Valid ..., User, Creat..., and three empty columns. The first row is highlighted in blue and contains the text: Edit Delft3D TW, TW\_Gun..., TW Gunt..., [empty], [empty], [empty], [empty], [empty], Guntersv..., 07-09-..., 07-12-..., 07-13-..., Boy..., 07-10-..., [checkmark], [X], [icon].

In the center, a 'Copy modifiers' dialog box is open, showing a list of scenarios: Scenario 0, Scenario 1, Scenario 2, and Scenario 3. The 'OK' button is highlighted.

Below the dialog box, the 'Modifier Properties: Edit Delft3D TW' section is visible. It includes a 'Name' field with the text 'TW\_Guntersville Dam' and a 'Start time' field with the text '07-09-2018 24:00:00'. To the right, there are buttons for 'Export' and 'Re-run', and a section labeled 'Apply To' with a 'Valid time' field showing '07-13-20'.

At the bottom, the 'Locations' section lists 'Buffalo nr Flat Woods' and 'Guntersville Dam', with 'Guntersville Dam' selected. The 'Operation' section shows 'Time series' selected. Below this, a graph titled 'Guntersville Dam' plots 'Temperature Water (DEGF)' on the y-axis (ranging from 100 to 400) against time on the x-axis (from 07-09-2018 24:00 to 07-11-2018 12:00). The graph shows a blue line for 'TW [1]' and a red line for 'TW [1] modified'. The blue line starts at approximately 400 DEGF and drops sharply to about 100 DEGF by 07-10-2018 12:00, then remains constant. The red line is a horizontal line at approximately 100 DEGF.

At the bottom of the graph, the text 'Delft3D\_Preprocessing\_Scenarios:' is followed by '[1] Delft3D\_Preprocessing\_Scenarios 07-13-2018 11:00:00 CDT Curren'.

# Select columns

- In modifiers table option to select columns (hide / show) and change order
- Changed settings are stored in user settings

Mod type	User	Name	Start	End	Active
CHGBLEND	Anne Hommelberg	ADJUSTQ_BENM5_BEN...	--	--	<input checked="" type="checkbox"/>
SACCO	Anne Hommelberg	SACCO_BENM5	12-02-2017 12:00:00	12-02-2017 12:00:00	<input checked="" type="checkbox"/>
UNITHG	Anne Hommelberg	UNITHG_BENM5_BENM..	11-28-2017 12:00:00	12-07-2017 12:00:00	<input checked="" type="checkbox"/>

Select Visible Columns

☒ Regular

☒ Mod type

☒ Name

☐ Summary

☐ Locations

☒ Start

☒ End

☐ Valid Time

☒ User

☐ Creation time

☒ Active

☐ Delete

☐ Copy

OK

Cancel

Create mod

CHGBLEND

IGNORETS

SWITCHMAP

Import

Export

Re-run

TSCHNGF

UNITHG

RATING SHIFT

SACCO

Modifier Properties: CHGBLEND

Name ADJUSTQ\_BENM5\_BENM5\_UpdateStates

Apply

Apply To

Blending steps

Map

Plots

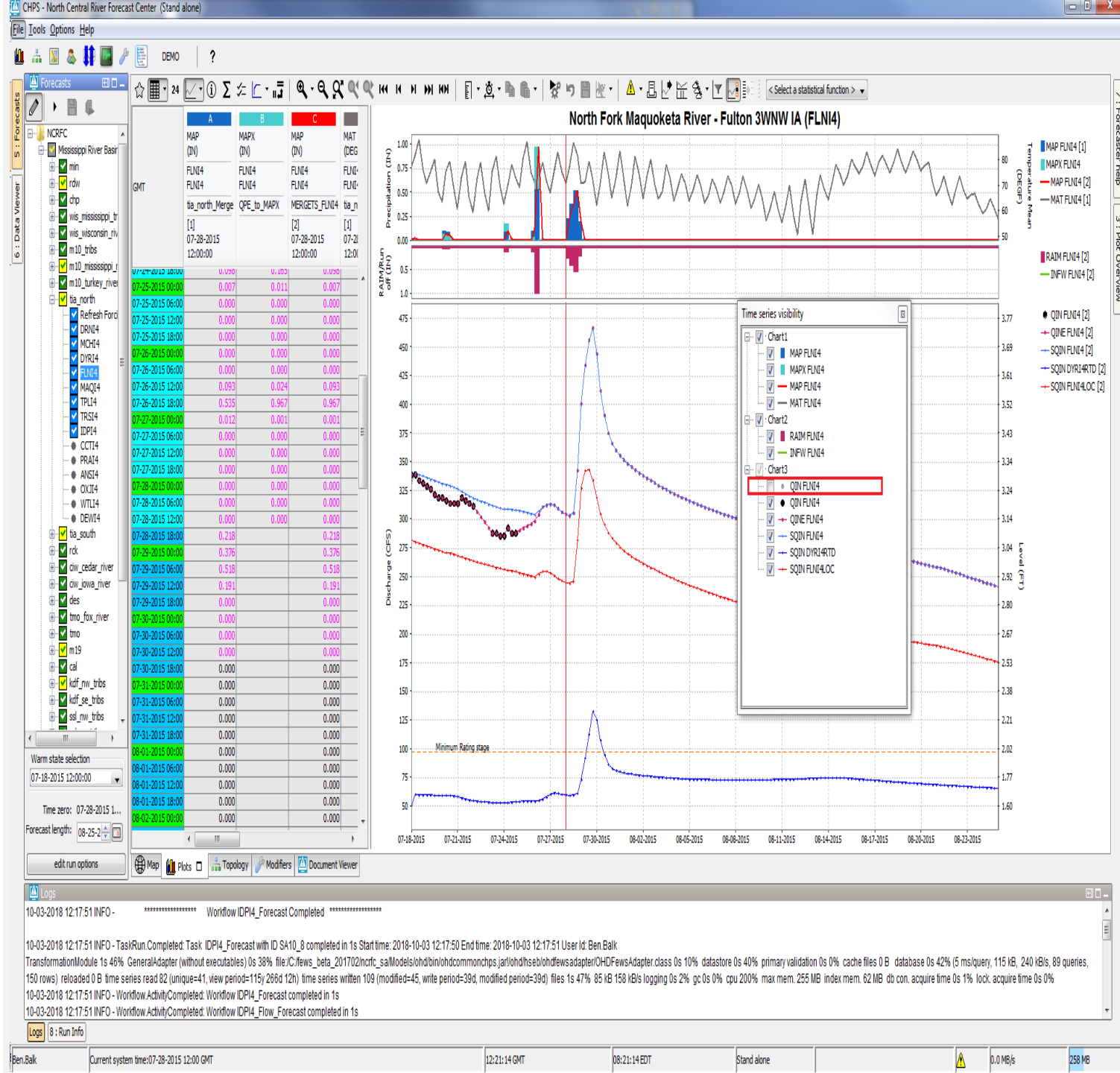
Topology

Modifiers ☐

Document Viewer

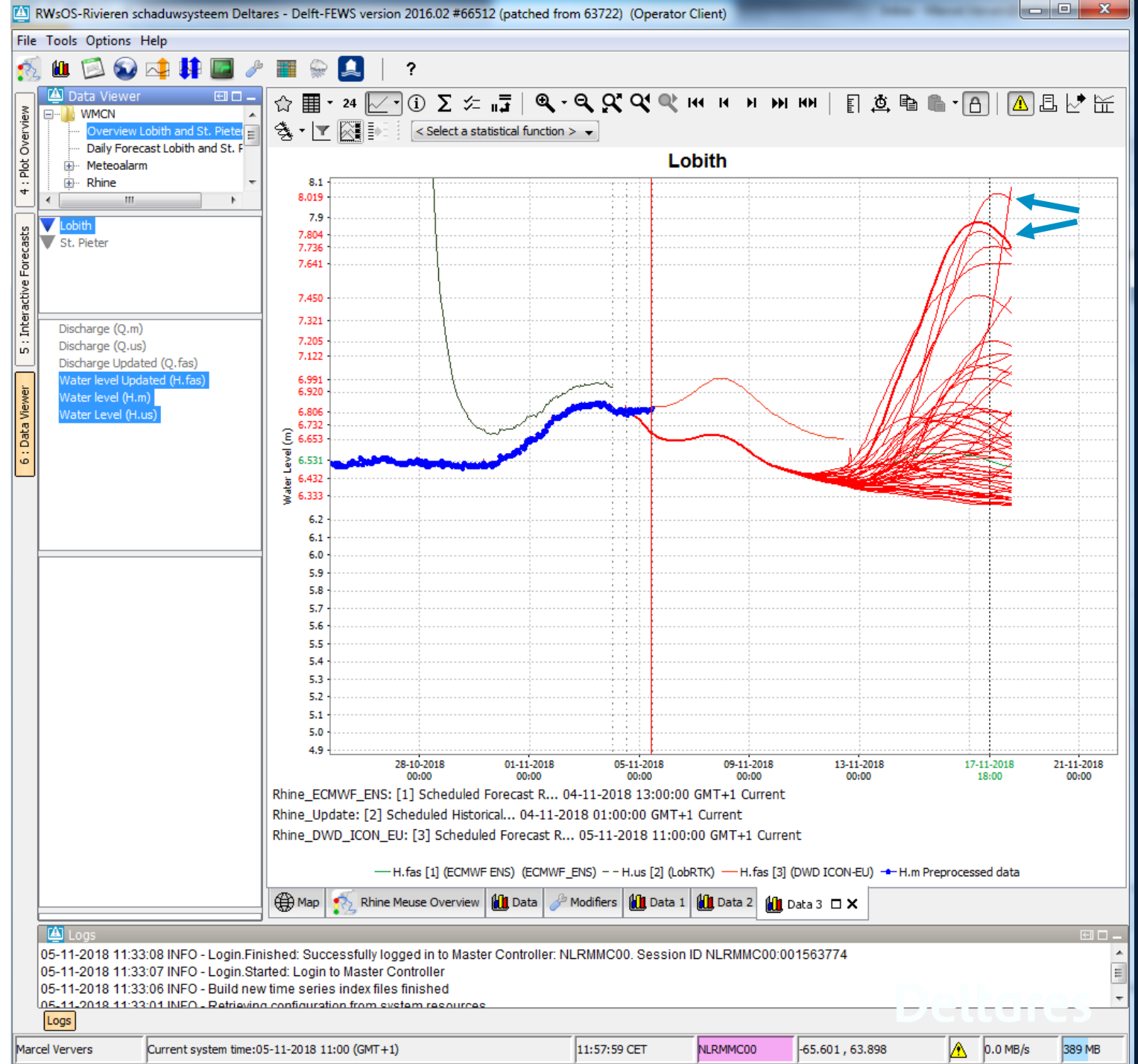
# Timeseries not in table

- Time series in displayGroups only in plot (not in table)
- Useful for plot with different time steps when you want to copy time series



# Select ensemble members

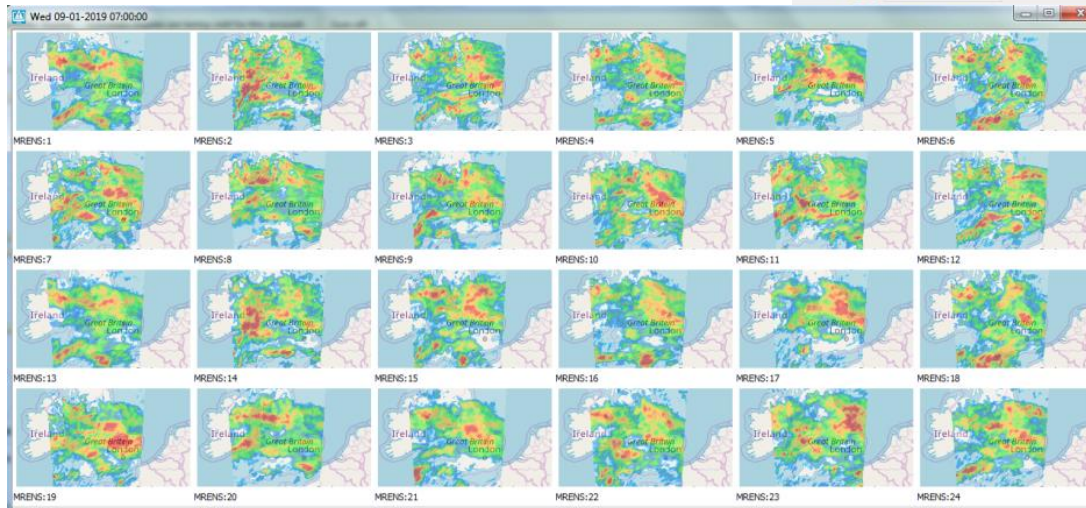
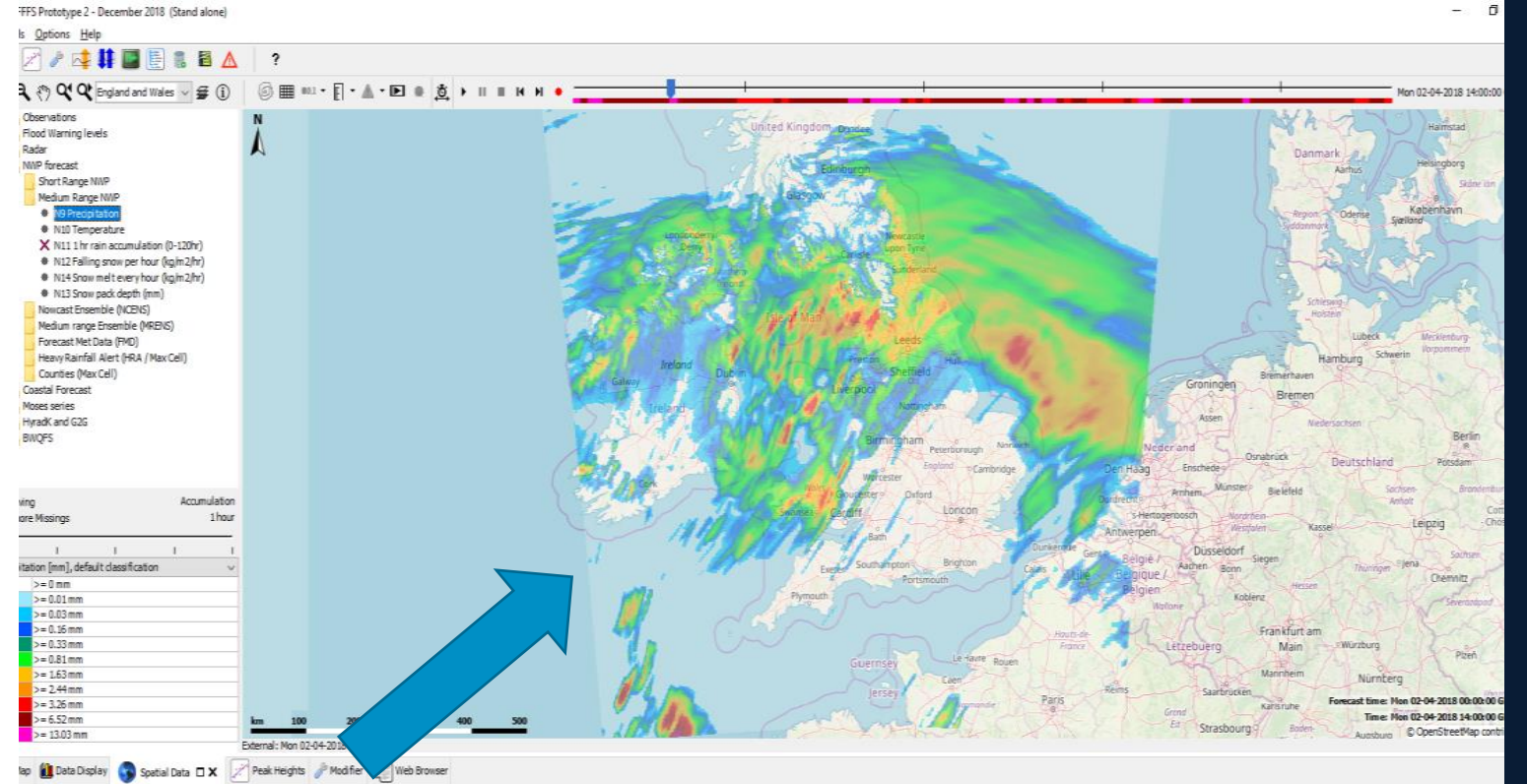
- Perform statistical analysis each member (e.g. min, max, ave, ...)
- Order Ensemble members on this rankingVariable
- Define how many members to use from top of list <numberOfMembers>
- Use only these members in further processing





# Ensemble display

- Postage stamps of all ensembles
- Using slider, aggregation and zooming from main Spatial display
- Ensemble member selection and ensemble member comparison

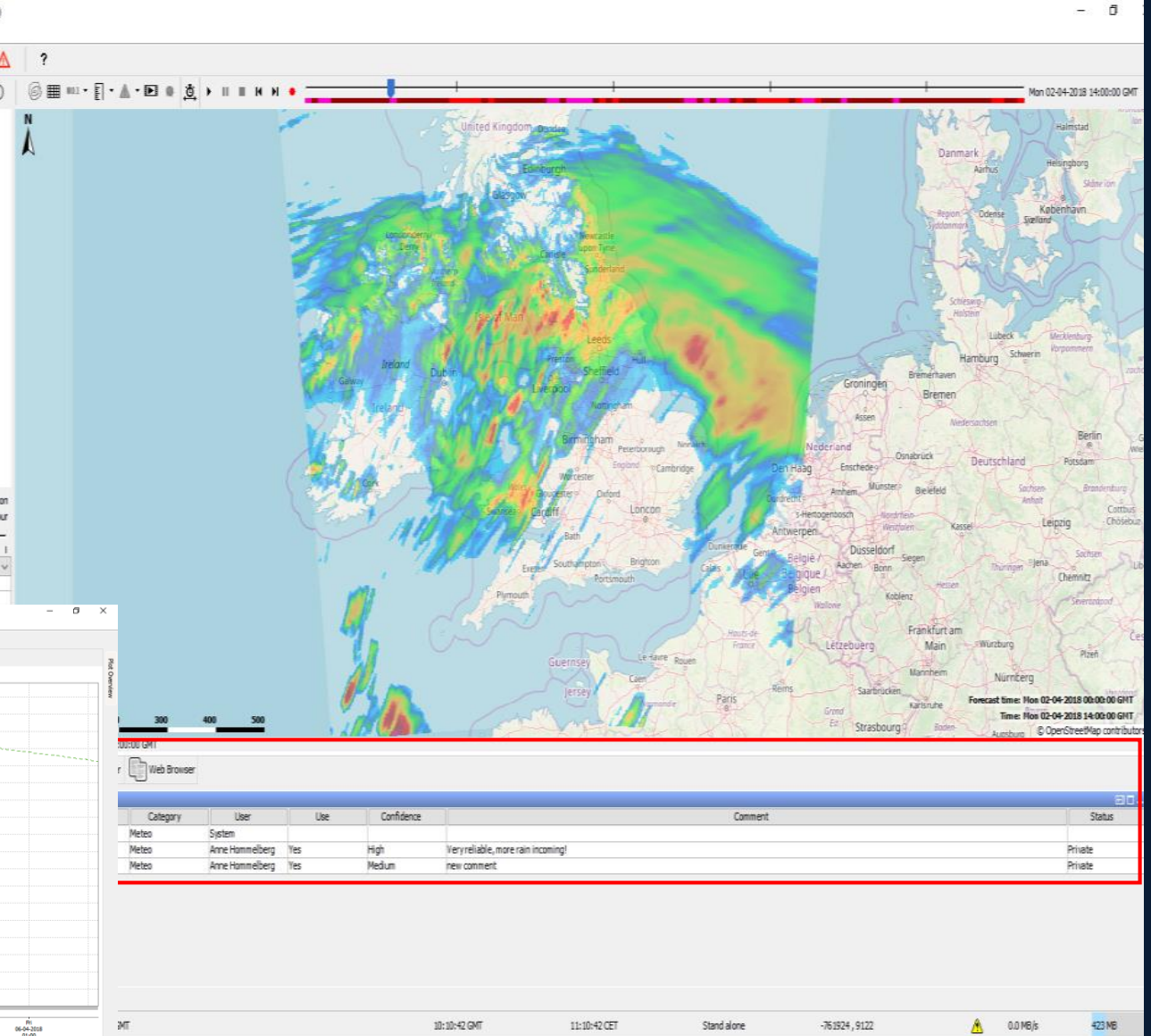
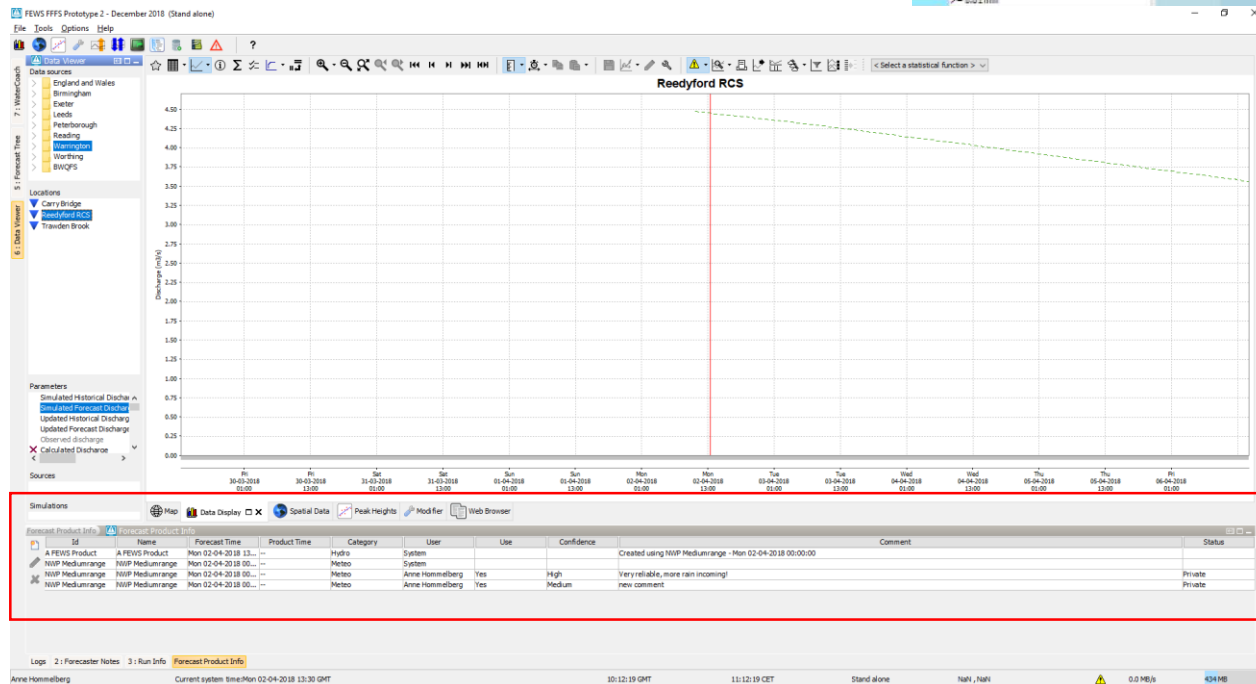


Time	Category	User	Use	Confidence	Comment	Status
	Meteo	System				
	Meteo	Anne Hommelberg	Yes	High	Very reliable, more rain incoming!	Pending
	Meteo	Anne Hommelberg	Yes	Medium	new comment	Pending
13:30 GMT				10:10:42 GMT	11:10:42 CET	Stand alone
					-761924, 9122	0.0 MB/s 423 MB



# Product information display

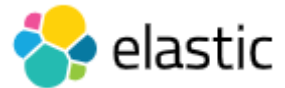
- View forecast product information
- Add additional comments to forecasts
- For imported 'external' forecasts
- Or internally produced forecasts
- Spatial display & data display



## Other aspects...

### OpenJDK

- 2018.02 - Support Java 11 OpenJDK

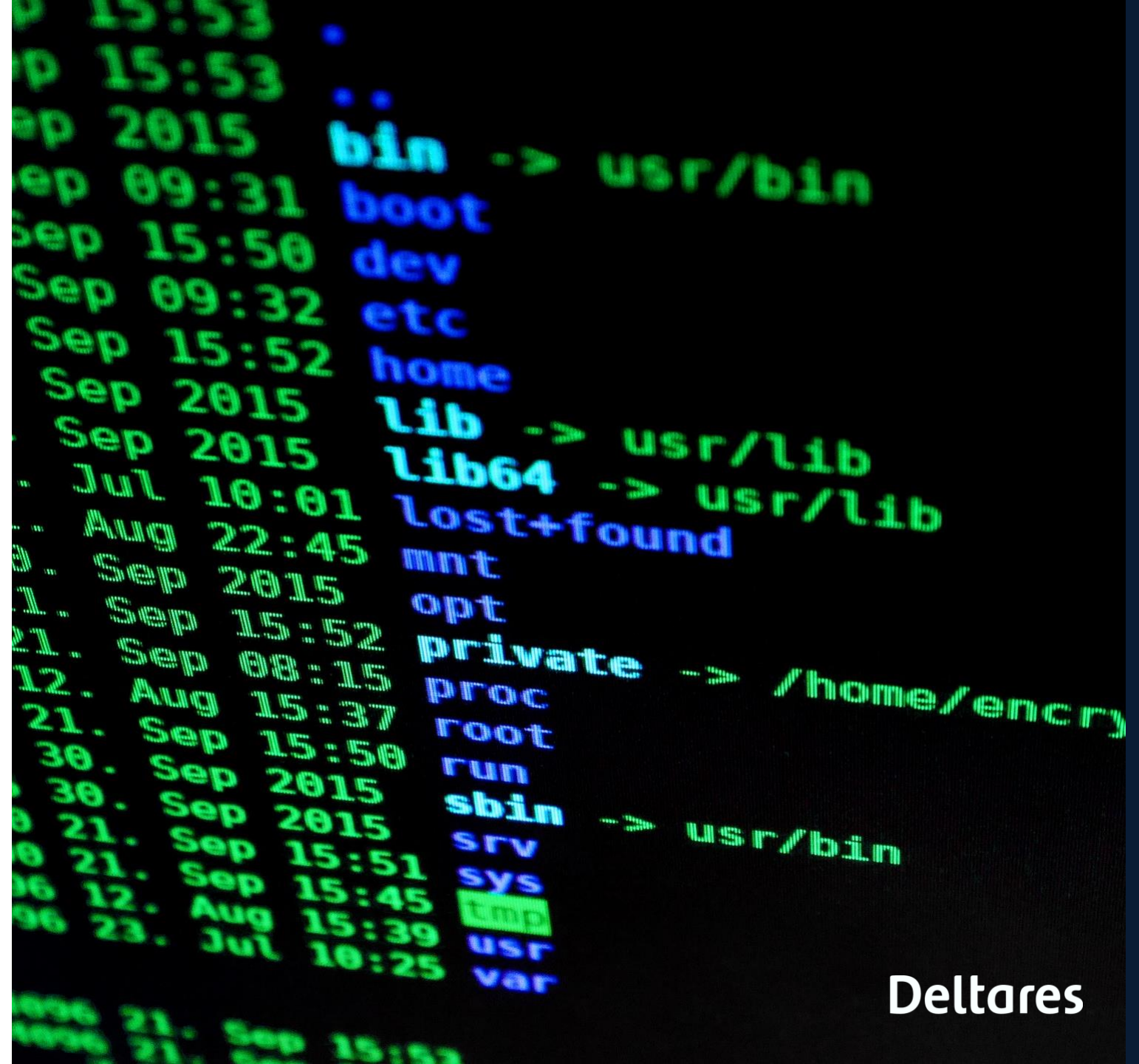


- New version Elastic Search (v6.4.2)



Apache Tomcat®

- New version Tomcat (v9.x)





## Development Team...

- Stable core...
- Roadmap involvement & knowledge sharing
- New faces in 2018...





# FEWS NEWS...

- 4 editions this year...
- 2500 recipients...
- Prominent place in the new portal



# New Portal...

- With external assistance renewing the portal...
- New look & feel
  - New users: basics...
  - Regular users: forum, best practices, new ideas...
- Most important: Interaction...

The screenshot shows the Delft-FEWS portal interface. At the top, there is a navigation bar with the Delft-FEWS logo and links for HOME, TRAININGS, COMMUNITY, FEWS-NEWS, PROJECTS, PAGES, and DOWNLOADS. On the right side of the header, there are links for SEARCH, LOGIN, Forum, Blog, Best practice, and New ideas. A left sidebar contains a 'Category' section with checkboxes for Environment, Flood risk, Infrastructure, Adaptive delta planning, and Water & soil resources (which is selected). The main content area is titled 'Blogs' and features a list of blog posts. Each post includes a thumbnail image, a title, the author's name and profile picture, the date, a short text excerpt, and a 'Read more >' link. The first post is 'It is dry this summer' by Jan Verkade (20 June 2018) with a thumbnail of a dry, cracked field. The second is 'Hidden secrets in the North Sea' by Marc Hijma (19 May 2018) with a thumbnail of people on a boat. The third is 'Nature-based solutions: do we know how to do it?' by Bregje van Wiesenbeck (10 April 2018) with a thumbnail of a dry, cracked field. The fourth post is partially visible at the bottom, titled 'It is dry this summer' by Jan Verkade (20 June 2018) with a thumbnail of people on a boat. The Deltares logo is visible in the bottom right corner of the page.

**Delft-FEWS**

HOME TRAININGS COMMUNITY FEWS-NEWS PROJECTS PAGES DOWNLOADS

SEARCH LOGIN

Forum  
Blog  
Best practice  
New ideas

**Category**

- ☐ Environment
- ☐ Flood risk
- ☐ Infrastructure
- ☐ Adaptive delta planning
- ☒ Water & soil resources

**Blogs**

**It is dry this summer**

Jan Verkade | 20 June 2018

It has been dry in the Netherlands for weeks. It is nice summer weather and we spray the garden every day. But we also see that brooks fall dry, that farmers have to irrigate, that there are ...

[Read more >](#)

**Hidden secrets in the North Sea**

Marc Hijma | 19 May 2018

The North Sea still hides many secrets. A joint team of researchers from the Royal NIOZ Sea Research, TNO, Delft, Utrecht University and VU University Amsterdam set out on an expedition with the...

[Read more >](#)

**Nature-based solutions: do we know how to do it?**

Bregje van Wiesenbeck | 10 April 2018

Implementation of nature-based interventions is on the rise. Nature now often has new functional labels added, parks for 'water retention', mangroves 'for coastal resilience' and oyster 'living shorelines'...

[Read more >](#)

**It is dry this summer**

Jan Verkade | 20 June 2018

**Deltares**



# User Meetings 2018...

- Delft-FEWS User Days Australia (May 2018)
- Dutch Delft-FEWS User Day (June)
- German “Anwendertreffen” (June)
- Delft Software Days – South East Asia
- International User Days (November)
- All events in combination with trainings and/or hands-on break-outs...



## 28. Juni 2018: Anwendertreffen Delft-FEWS

Das Vorhersagesystem Delft-FEWS wird im deutschsprachigen Raum für ein großes Spektrum von Aufgabenstellungen eingesetzt und erhält laufend neue Funktionen zur Datenaufbereitung, Modellierung oder Ergebnisausgabe.

Mit dem diesjährigen regionalen Anwendertreffen Delft-FEWS in Aachen erhielten die Anwender Gelegenheit, sich über die Einsatzmöglichkeiten des Vorhersagesystems auszutauschen, Neuerungen kennenzulernen und offene Fragen mit den Entwicklern des Systems zu diskutieren.

Die Teilnehmer von acht verschiedenen Organisationen repräsentierten ein breites Spektrum von Delft-FEWS-Anwendungen, das von



## Themen und Vortragende

- Agenda
- Delft-FEWS neue Features, Roadmap, Marcel Ververs, Maarten Smoorenburg
- Delft-FEWS im Dauereinsatz zur Wasserstandsvorhersage und Informations Bundesamt für Seeschifffahrt und Hydrographie
- Delft-FEWS bei der Landestalsperrenverwaltung Sachsen, Maik Ulrich, Land
- Einbindung von Delft-FEWS in das Hochwasserportal des Wupperverbandes
- Frühwarnung mit Delft-FEWS, Integration von Sensor-Web-Date, Vladislav I.
- Analyse der hydrologischen Modellnachführung für das operationelle Hoch Sachsen am Beispiel ausgewählter Talsperreneinzugsgebiete, Oliver Buchh

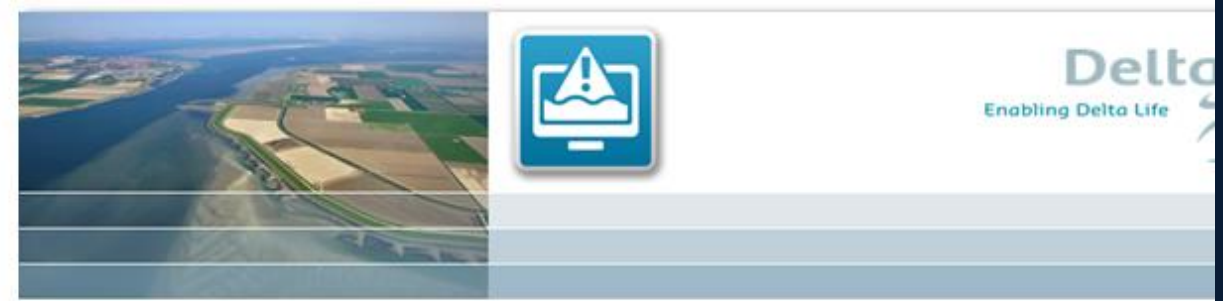
## 29. Juni 2018: FEWS Hands-On Workshop

Im Anschluss an das Treffen fand am 29. Juni ein „FEWS Hands-On Workshop“ mit zu verschiedenen praktischen Themen statt.

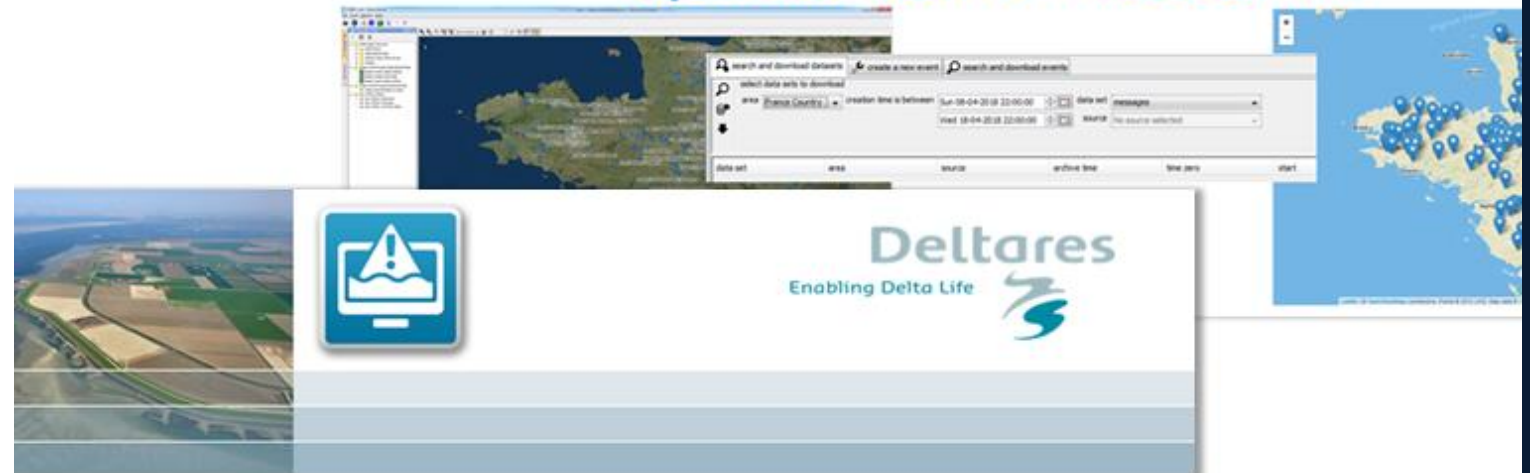


# New online courses...

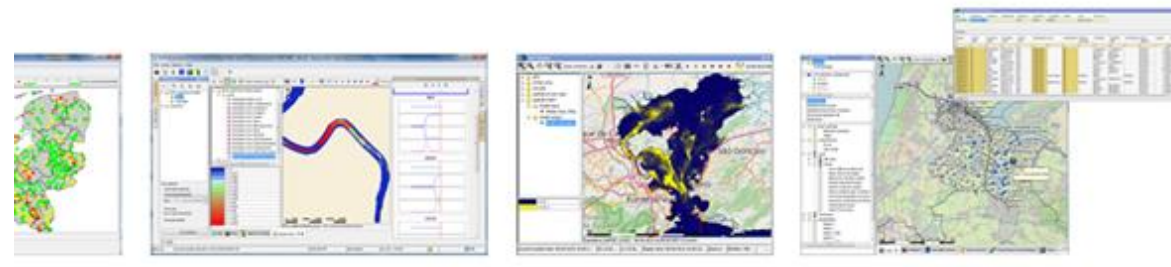
- Basic Configuration course (2017.01)
- Water Quality & Samples (2017.01)
- PI webservice and open archive (2017.02), extended to 'Roadmap Course' during DSD
- Many download requests...
- Soon to be upgraded to 2018.02...



## Delft-FEWS Configuration Course Open Archive and PI Web Service



## Delft-FEWS Configuration Course Water Quality & Samples



## FEWS in the NEWS...

- **NRC:** Dutch daily newspaper about the Drought Monitor from the RWS Waterkamer
- **The Examiner:** TasWater's David Krushka is being interviewed and quoted about dam and weather monitoring





# Concerns...

- Did everything go without hick-ups...?
- No...
  - Upgrade (to 2017.02) without downtimes of a (dual) system...
  - (New) Maintenance mode while upgrading was not sufficient...
  - Duplicate globalRowIds found while they should be unique...
  - Too drastic reduction in (MC) log message event codes...

**Resolving these issues took substantial additional (development & bugfixing) time which resulted in pushing acceptance dates...**





# Outlook 2019...

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- Finalizing roadmap features
- Large and small feature requests...
- Assistance in installs & upgrades...
- New community portal...
- Implementing FFFS (EA) with a lot of new features...
- So many things to look forward to...

New Threshold Overview Display...

Create your own 'dashboard' from multiple displays...

Product Information Display...

Ensemble-member selection & inspection...

New set of (display) icons...

and lots more...

**Deltares**

Delft-FEWS International User Days 2018

Thank you for your attention

**Deltares**



[fews.info@deltares.nl](mailto:fews.info@deltares.nl)



[www.delft-fews.com](http://www.delft-fews.com)

