



Delft-FEWS2020 Roadmaps

Status update June 2018

Marcel Ververs (Deltares)

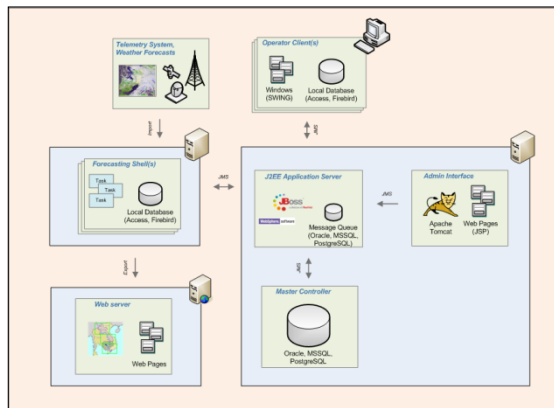
28th of June 2018

Overview

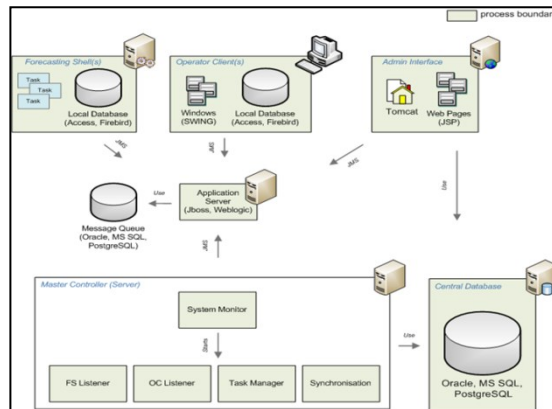
- (re) Introducing the Delft-FEWS 2020 Roadmaps
 - Recap: why...
 - Planning: when...
 - Persons: who...
 - Finances: how much...
 - Progress: what...

Introduction and rationale

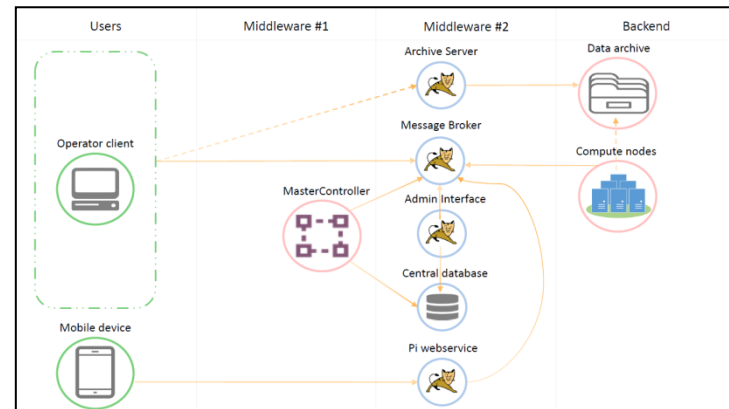
- Delft-FEWS Architecture: still based on initial design (2003-2004)
- Delft-FEWS developments focused on (front-end) functionality ($\pm 90\%$)



2004



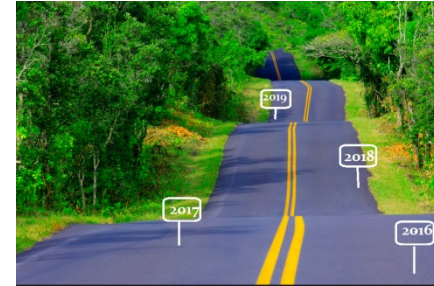
2009



now

The outside world changes...

- Many changes in IT and science since 2004
 - IT landscapes, solutions and security requirements
 - Data types, formats, resolution, quantity, storage
 - Hydrology, meteorology – distributed models, ensembles
- Re-design was required for Delft-FEWS
- From the Delft-FEWS 2020 vision: 3 roadmaps are proposed
 1. Backend Simplification and Automation
 2. Enhanced web services (PI Web Service)
 3. Seamless and open Archive
- CSB recommended Community Funding

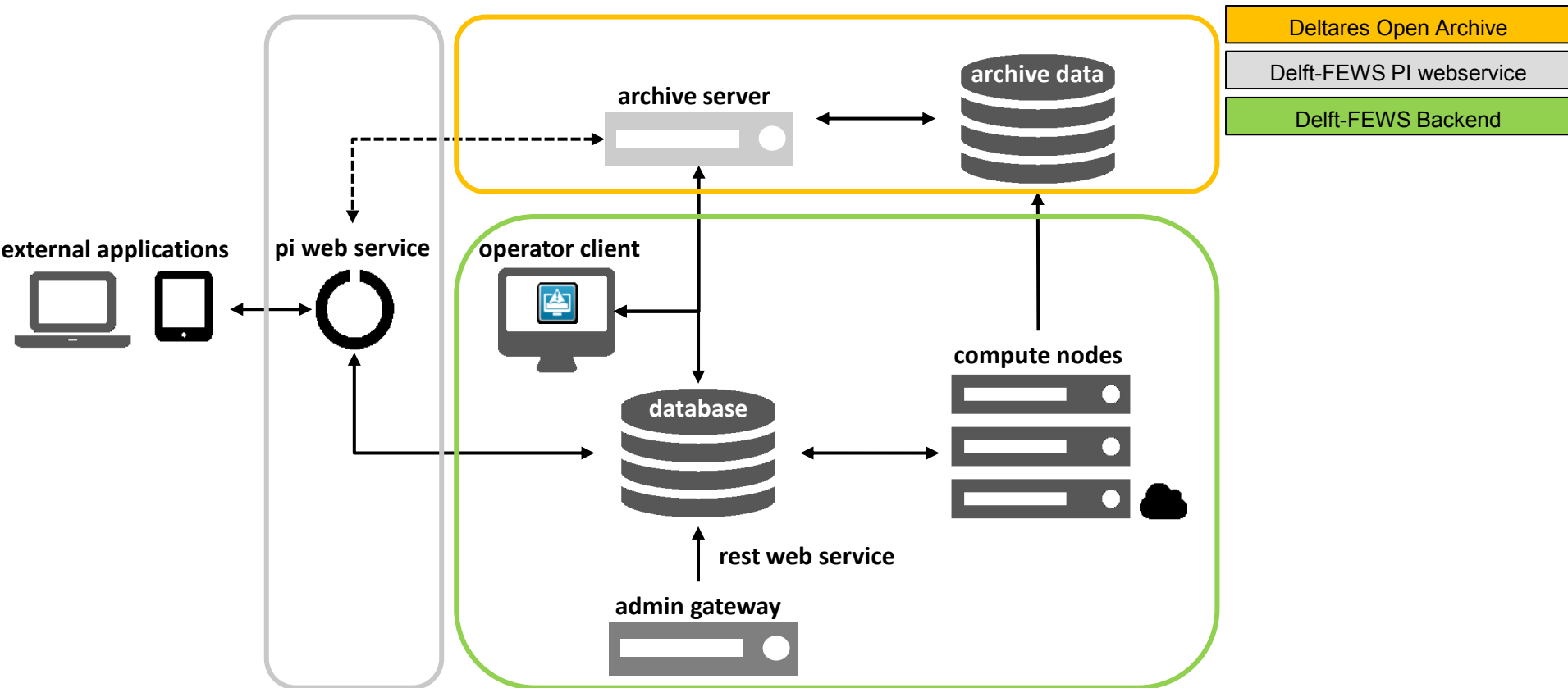


Delft-FEWS Roadmaps...

- Not so (very) visible and mostly done under the hood
- As a user you shouldn't notice, but...a lot (!) will have to be done

“We went to HORNBAACH and have replaced all the plumbing, heating and electricity cables in the (Delft-FEWS) house and avoiding a hot water toilet flush, preventing the shower electrocutes you and making sure the kitchen wastewater does not end up in your bath tube...”

Delft-FEWS 2020 Roadmaps: Recap

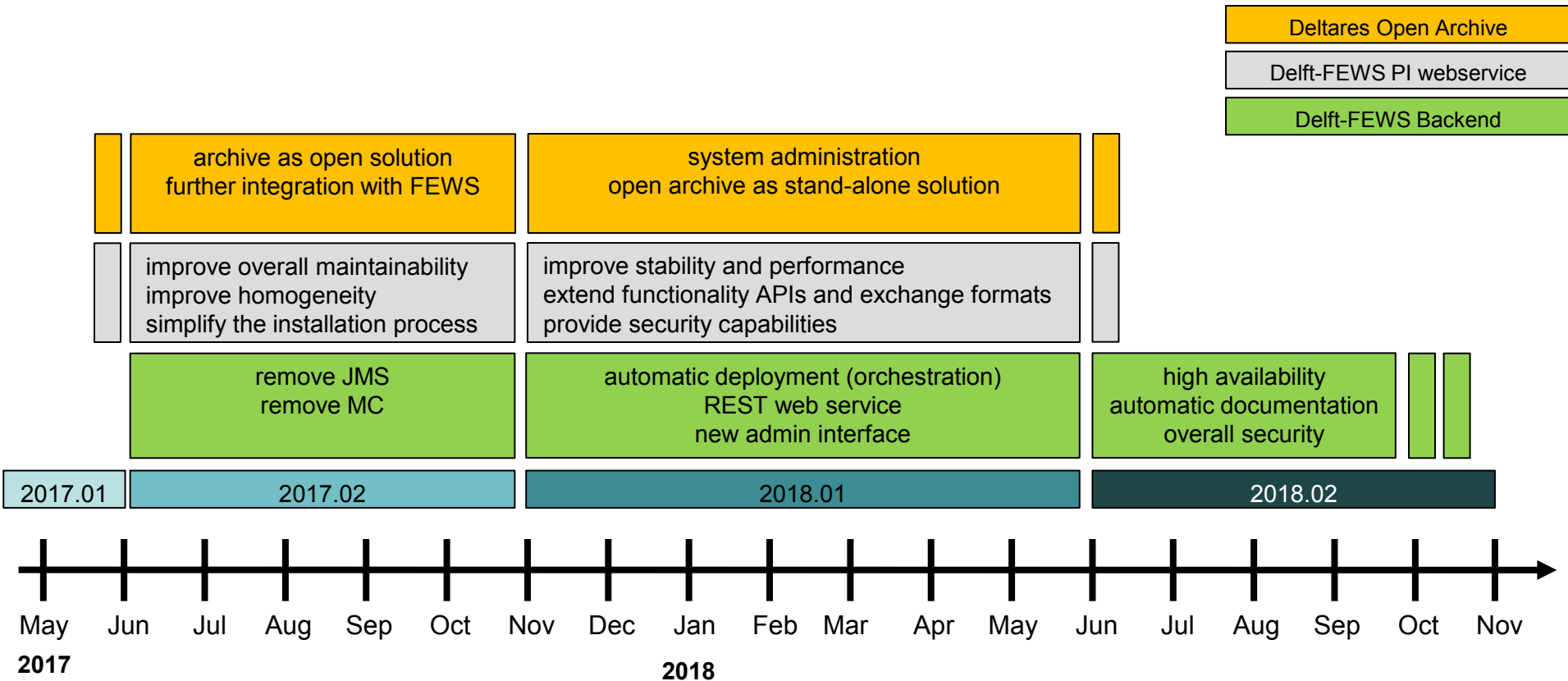


High level benefits for all Delft-FEWS Users...

- New and modern software architectures (with fewer components)
- Automatic / simplified roll-out of new software version and patches
- Automatic scaling computational nodes
- Seamless use of the Cloud
- Improved performance, robustness and security
- Decrease in maintenance requirements
- Seamless exchange of all data (Open Archive, PI Service, FEWS):
 - Easy sharing with other applications
 - Potential decrease of size and load on database



Original implementation plan...



Roadmap Backend: when...

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 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: when...

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Roadmap PI Webservice: when...

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

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Roadmap Open Archive: when...

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

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2017.02 delayed...but & because...

- Roadmaps in general: we **started later** (first: finish non-roadmap features)
- Some generic / regular features: **originally** planned for: **2018.01** are in...
- **Agile** approach: design choices not completely ready at start
- Backend: **remove JMS**
 - Not possible to split over more releases: → **one go...**
- Huge **increase** in **knowledge development** across developers
 - Same level of knowledge with more than one developer → takes time
- **Planning** and **availability** of developers
- Mainly: **more** has been done
 - **Database** schema/design: **completely new**
 - **MC-OC** synch is in (where **only DDA** was planned for 2017.02)
 - **Synchronisation** is prepared for large files (**streaming**)



Release Summary (with roadmap functionality)

Release	2017.02	2018.01	2018.02	2019.01
Date	1 st of June 2018	1 st of Sept 2018	1 st of Dec 2018	1 st of June 2019

Release	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19
2017.02																
2018.01																
2018.02																
2019.01																

development	test Intern	test extern	released version
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Who: the Delft-FEWS Development Team...

Deltares Open Archive

Delft-FEWS PI Webservice

Delft-FEWS Backend



Deltares

(Original) Costs...

Roadmap Developments

- Started on all 3
- Backend is most challenging...
- Next to 'ongoing' (regular) request for features

Finances

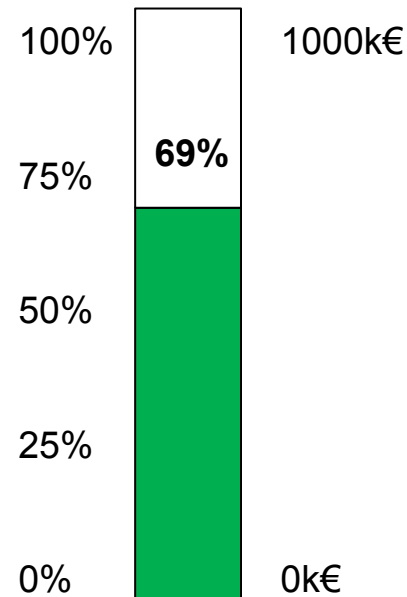
- Developments: 550 – 680 k€
- Total: 750 k€ – 1000 k€

Roadmap Developments	Efforts (k€)
Roadmap 1: Backend	290 – 365
Roadmap 2: PI webservice	100 – 130
Roadmap 3: Open Archive	160 – 185
Total	550 – 680

* current exchange rates

Community Funding...(april 2018)

Source	Contribute to Roadmap(s)	(k€)	Status
Rijkswaterstaat in the Netherlands (RWS)	backend	57	guaranteed
Tennessee Valley Authority	backend, archive	41	guaranteed
GO-FEWS (Dutch Waterboards)	all	190	guaranteed
National Weather Service (US)	all	77	guaranteed
Australian/SE-Asia users		47.5 37.5 ...	guaranteed intended under discussion
Swiss Germany, NRW UK, AT, IT, ES, BE	all	40 53 ...	guaranteed intended under discussion
Deltares (internal, research, EU)	all	200	guaranteed
Total (Target is 1000 k€)		688	



Finances (end of March 2018)

Roadmap	Content	Finances*
Backend	40%	105%
PI web service	50%	29%
Archive	50%	32%
Total		72%

* Based on: 680 kE estimate

Finances (end of March 2018)

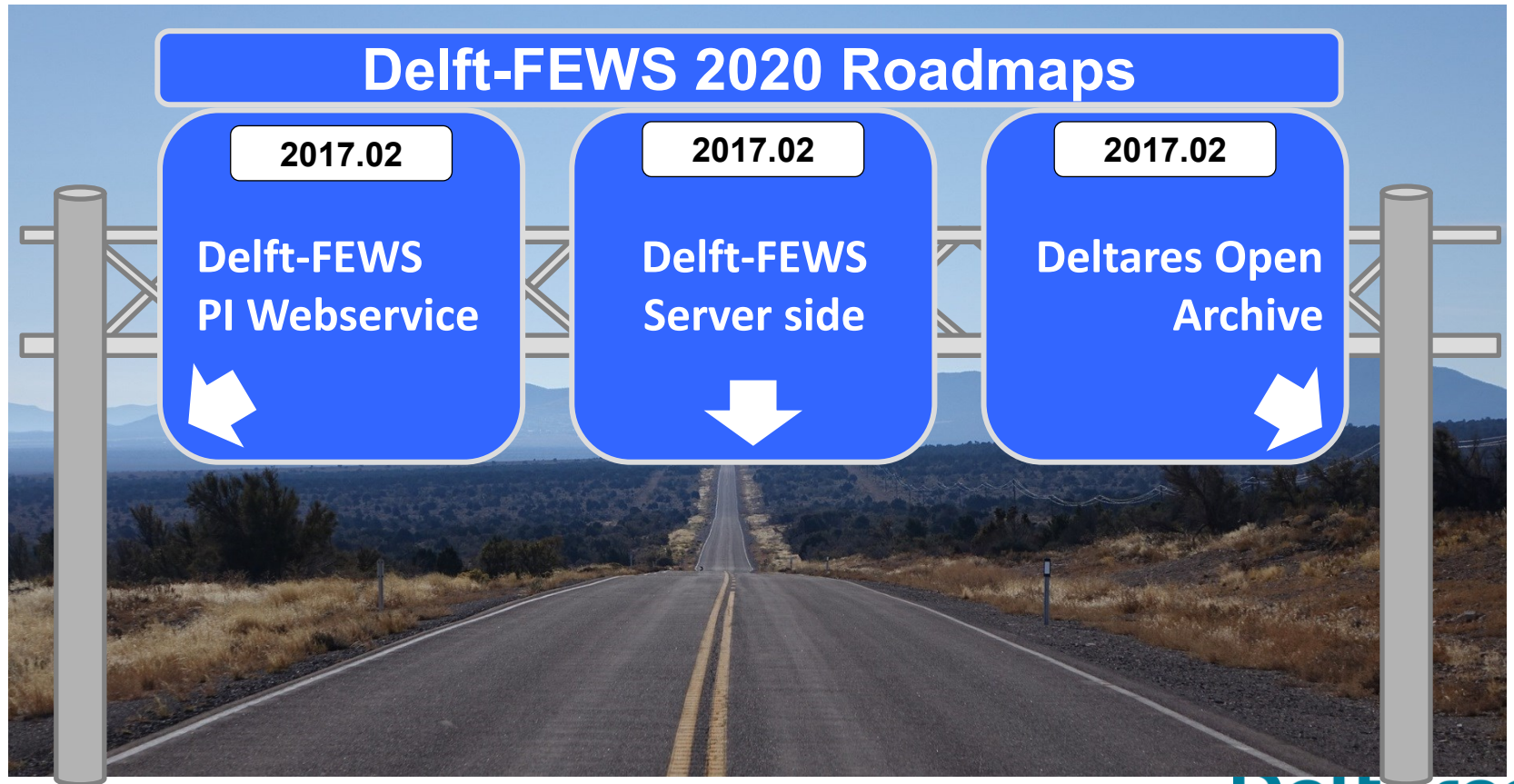
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* Based on: 680 kE estimate

Where are we...(heading)?



What: Features Roadmaps



Delft-FEWS Server side roadmap...

Delft FEWS - FEWS 2017.02 development aubohyt01 postgres

Main menu

- » System Status
 - » Live System Status
 - » View Logs
 - » Log Manager
 - » Collect System LogFiles
- » Files
- » Forecast Tasks
- » Workflows and FSSs
- » User Administration
- » System Control
- » Database Analysis

Running on aubohytmc01

Logged on as ADMIN

» Log Off

System Status

Live System Status

[Refresh](#)

Status MCs

MC ID	Status	Pending Tasks	Running Tasks	OC Sessions	Last Heartbeat	Software version	Schema version	DB version
aubohytmc01	OK	0	0	0	27/04/2018 07:09:11 GMT	MasterController:stable_2017.02 (74822)	v2017.02_20171129_1	PostgreSQL 9.6
nldefedmc01	OK	0	0	0	27/04/2018 07:09:09 GMT	MasterController:stable_2017.02 (74822)	v2017.02_20171129_1	Oracle 12.1
nldefedmc02	OK	0	0	0	27/04/2018 07:09:10 GMT	MasterController:stable_2017.02 (74822)	v2017.02_20171129_1	SqlServer 14.0

Status FSSs

MC ID	FSS ID	Status	Last Run Workflow ID	Last Task Run Dispatch Time	Last Heartbeat
aubohytmc01	FSS00	Complete	Ovens_SWIFT_Ensemble_Forecast	26/04/2018 19:28:06	27/04/2018 07:09:15 GMT
aubohytmc01	FSS01	Complete	Ovens_Rainfall_Forecast	27/04/2018 07:05:02	27/04/2018 07:09:15 GMT
aubohytmc01	FSS02	Complete	Process_Forecasts	27/04/2018 06:28:00	27/04/2018 07:09:15 GMT
aubohytmc01	FSS03	Complete	CalculateAPI	26/04/2018 23:00:05	27/04/2018 07:09:15 GMT
nldefedmc01	FSS00	Complete	Abercrombie_SWIFT_Rainfall_Forecast	27/04/2018 07:05:00	27/04/2018 07:09:14 GMT
nldefedmc02	FSS00	Complete	ImportExternal	27/04/2018 06:44:06	27/04/2018 07:09:13 GMT

Status MC Components

Task Run Manager Status	MC Rolling Barrel Status	System Alerter Status	MC Synchronization Status
OK	OK	OK	OK

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2017.02

Roadmap
Features

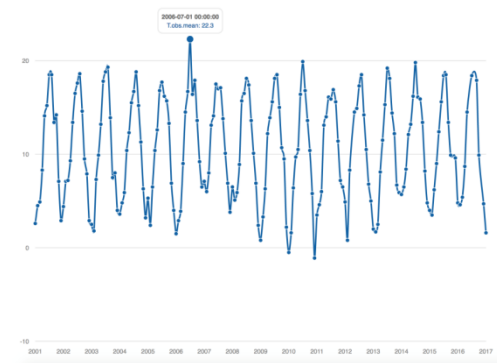
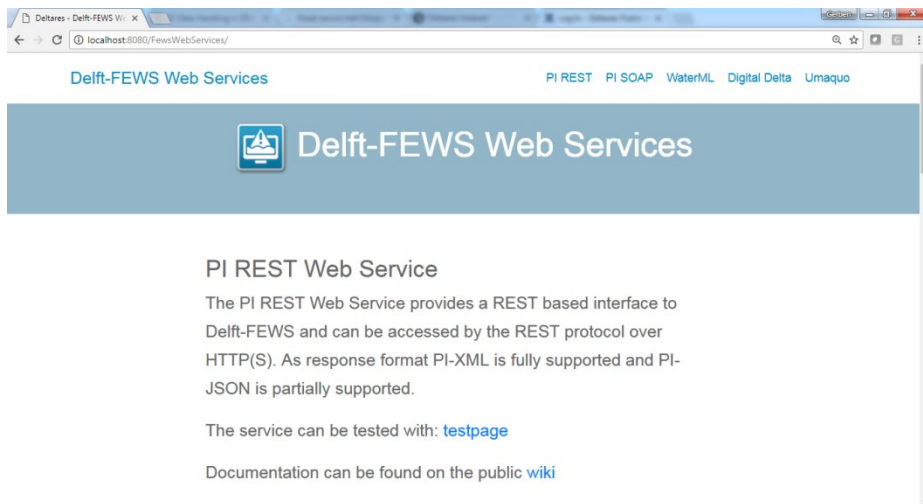


27 juni 2018

Deltares

Delft-FEWS PI Webservice Roadmap

- **Simplified** installation
- New **documentation** (incl. nice examples for JSON)
- **REST** / SOAP web services aligned
- **Test pages** (for each web service)



Delft-FEWS PI Webservice Roadmap

- Default FEWS Web Service **testpage**: <http://localhost:8080/FewsWebServices/>.
- FEWS Web Services **installation** and **migration**:
<https://publicwiki.deltares.nl/display/FEWSDOC/FEWS+Web+Services>
- FEWS PI **REST** Web Service **documentation**:
<https://publicwiki.deltares.nl/display/FEWSDOC/FEWS+PI+REST+Web+Service>
- **Examples** (javascript, python) of Web Service usage:
<https://publicwiki.deltares.nl/display/FEWSDOC/FEWS+PI+JSON+REST+Examples>

2017.02

Roadmap
Features



Deltares Open Archive Roadmap

- New tab **Archive server status** added to the OC/SA **System Monitor**

The screenshot displays the Deltares Open Archive System Monitor application. The 'Archive Server Status' tab is selected and highlighted with a red dashed box. The interface includes a menu bar (File, Tools, Options, Help), a toolbar, and a sidebar with various navigation options. The main content area is divided into two sections: 'Info' and 'Archive Server tasks'.

Info Section:

Property	Value	Status
Version	version: 2017.02, build: 74455 Apr11, type: development, jre: 1.8.0_45, os: Windows 7, mxc: 259m	
Server at	http://localhost:8080/deltares-archive-server	running
Task scheduler		running
Data server (Threads)		running
Records in catalogue	11379	
Total size on disk	1397 GB	
Free space on disk	88 GB	

Archive Server tasks Section:

Tasks	Repeat Time	Status
internal harvester	2 hour	pending
historical events exporter	2 hour	pending
system metrics	2 hour	pending
clear internal catalogue	-	pending

At the bottom left, there is a 'Warm state selection' dropdown menu and a 'Time zero: 11-07-20...' label. At the bottom right, there are 'Close' and 'Help' buttons.

2017.02

Roadmap
Features



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Deltares Open Archive Roadmap

- New tab **Archived Forecasts** added to the OC/SA **Forecast Manager**

The screenshot displays the Deltares Forecast Manager application. The top navigation bar includes tabs for 'Forecast Overview', 'Current Forecasts', 'Forecast Expiry Time', 'Modifiers', and 'Archived Forecasts'. The 'Archived Forecasts' tab is highlighted with a red dashed box. Below the navigation bar, a table lists archived forecasts with columns for Status, T0, Dispatch time, Workflow, FDO, Area, and Source. The table contains several rows of data, including forecasts for 'MainstemTennessee_Forecast', 'KentuckyBarkley_Forecast', 'DuckElk_Forecast', 'Bear_Forecast', 'Hiwassee_Forecast', 'Ocoee_Forecast', 'LittleTennessee_Forecast', 'FrenchBroad_Forecast', and 'ClinchPowell_Forecast'. A red dashed box also highlights the 'Status' column in this table. Below the main table, there is a section for 'Forecasts in Local Datasore' with a similar table structure. The bottom toolbar includes icons for Map, Plots, Topology, Spatial Data, Manual Forecast, Modifiers, System Monitor, and Forecast Management. A sidebar on the left shows a tree view of system documents, including 'TVA', 'System Documents', 'Import Station Data', 'Prep', 'Spill Program', 'Block Costs', 'Inflow Forecast Prep', 'Inflow Forecast', 'RiverWare', 'HEC-RAS', 'VPS', and 'HTMS'. A bottom status bar shows the current date as '2017.02' and the 'Forecast length' as '11-07-20...'. A blue button in the bottom left corner reads 'Roadmap Features' with a downward arrow.

Status	T0	Dispatch time	Workflow	FDO	Area	Source
	06-04-2017 18:00:00	06-04-2017 19:36:43	MainstemTennessee_Forecast	Reichert, Michael Jay	scalar	TVA_Forecast
	06-04-2017 18:00:00	06-04-2017 19:30:13	KentuckyBarkley_Forecast	Kusmierczyk, Richard Adam	scalar	TVA_Forecast
	06-04-2017 18:00:00	06-04-2017 19:29:36	DuckElk_Forecast	Kusmierczyk, Richard Adam	scalar	TVA_Forecast
	06-04-2017 18:00:00	06-04-2017 19:29:01	Bear_Forecast	Kusmierczyk, Richard Adam	scalar	TVA_Forecast
	06-04-2017 18:00:00	06-04-2017 19:27:39	Hiwassee_Forecast	Kusmierczyk, Richard Adam	scalar	TVA_Forecast
	06-04-2017 18:00:00	06-04-2017 19:27:04	Ocoee_Forecast	Kusmierczyk, Richard Adam	scalar	TVA_Forecast
	06-04-2017 18:00:00	06-04-2017 19:26:43	LittleTennessee_Forecast	Kusmierczyk, Richard Adam	scalar	TVA_Forecast
	06-04-2017 18:00:00	06-04-2017 19:25:47	FrenchBroad_Forecast	Kusmierczyk, Richard Adam	scalar	TVA_Forecast
	06-04-2017 18:00:00	06-04-2017 19:25:37	ClinchPowell_Forecast	Reichert, Michael Jay	scalar	TVA_Forecast

	T0	Dispatch time	Workflow	What-if scenario	Description	FDO	FSS ID	Runtime	Output Time S...
	06-23-2017 15:00:00	06-23-2017 14:39:15	Calculate Water Order for Great Fal...					254d 15h 59...	1h
	06-23-2017 14:00:00	06-23-2017 14:37:14	Calculate Water Order for Great Fal...					256d 12h 45...	1h
	06-23-2017 12:00:00	06-23-2017 12:19:36	Calculate Water Order for Great Fal...					256d 15h 5m ...	1h
	06-23-2017 12:00:00	06-23-2017 10:42:38	Calculate Water Order for Melton H...					256d 16h 42...	1h

Deltares Open Archive Roadmap

Data from the archive can be used in a workflow that runs on the FSS

- Enabled: **seamless integration in workflows**
- Only enabled if `downloadMissingDataFromArchive` is configured in workflow!

```
1  <?xml version="1.0" encoding="UTF-8"?>
2  <workflow xmlns="http://www.wldelft.nl/fews" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:sch
3  <activity>
4      <runIndependent>false</runIndependent>
5      <downloadMissingDataFromArchive>true</downloadMissingDataFromArchive>
6      <moduleInstancelId>Demo</moduleInstancelId>
7  </activity>
8  </workflow>
9  |
```

2017.02

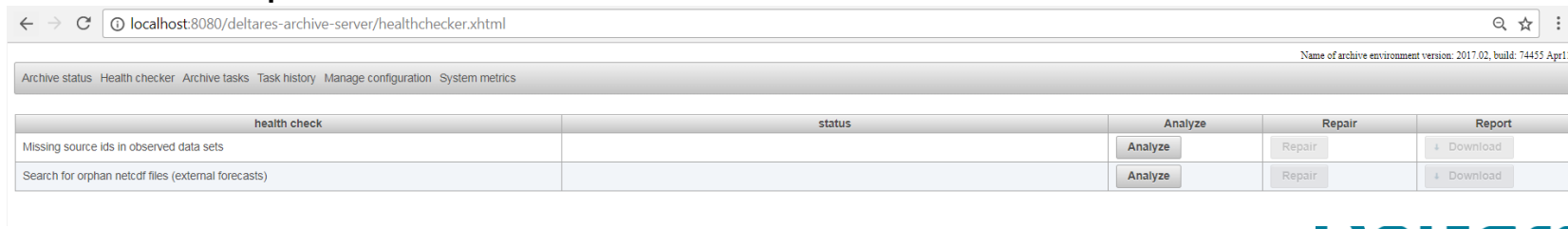
Roadmap
Features



Deltares Open Archive Roadmap

Archive Health Checker is a component with:

- A list of pre-defined checks
- Each check is for specific problem/bug
- Tasks when Health Checker is stated
 - Run analyze,
 - Download report,
 - Inspect report,
 - Run repair.



health check	status	Analyze	Repair	Report
Missing source ids in observed data sets		Analyze	Repair	Download
Search for orphan netcdf files (external forecasts)		Analyze	Repair	Download

2017.02

Roadmap
Features



Deltares Open Archive Roadmap

- Overview of the **system metrics**
- You must run the task system metrics first!

← → ↻ localhost:8080/deltares-archive-server/systemmetrics.xhtml 🔍 ☆ ⋮

Name of archive environment version: 2017.02, build: 74455 Apr11

Archive status Health checker Archive tasks Task history Manage configuration System metrics

System metrics files were generated at: 13-04-2018 15:00 [Download statistics](#)

year ↕	observed		simulated		external forecast		snap shot		configuration		rating curve		forecaster notes		products	
	number of netcdf files	size (MB)	number of datasets	size (MB)	number of datasets	size (MB)	number of datasets	size (MB)	number of datasets	size (MB)	number of datasets	size (MB)	number of datasets	size (MB)	number of datasets	size (MB)
2011	155	44.18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	156	44.91	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	1304	815.01	391	851.92	516	245.47	0	0	0	0	0	0	0	0	0	0
total	1615	904.11	391	851.92	516	245.47	0	0	0	0	0	0	0	0	0	0

2017.02

Roadmap
Features



Questions & Discussion





What's New in Delft-FEWS...

Plenary Presentation DFAT 2018 (Aachen, DE)
Maarten Smoorenburg (Deltares)

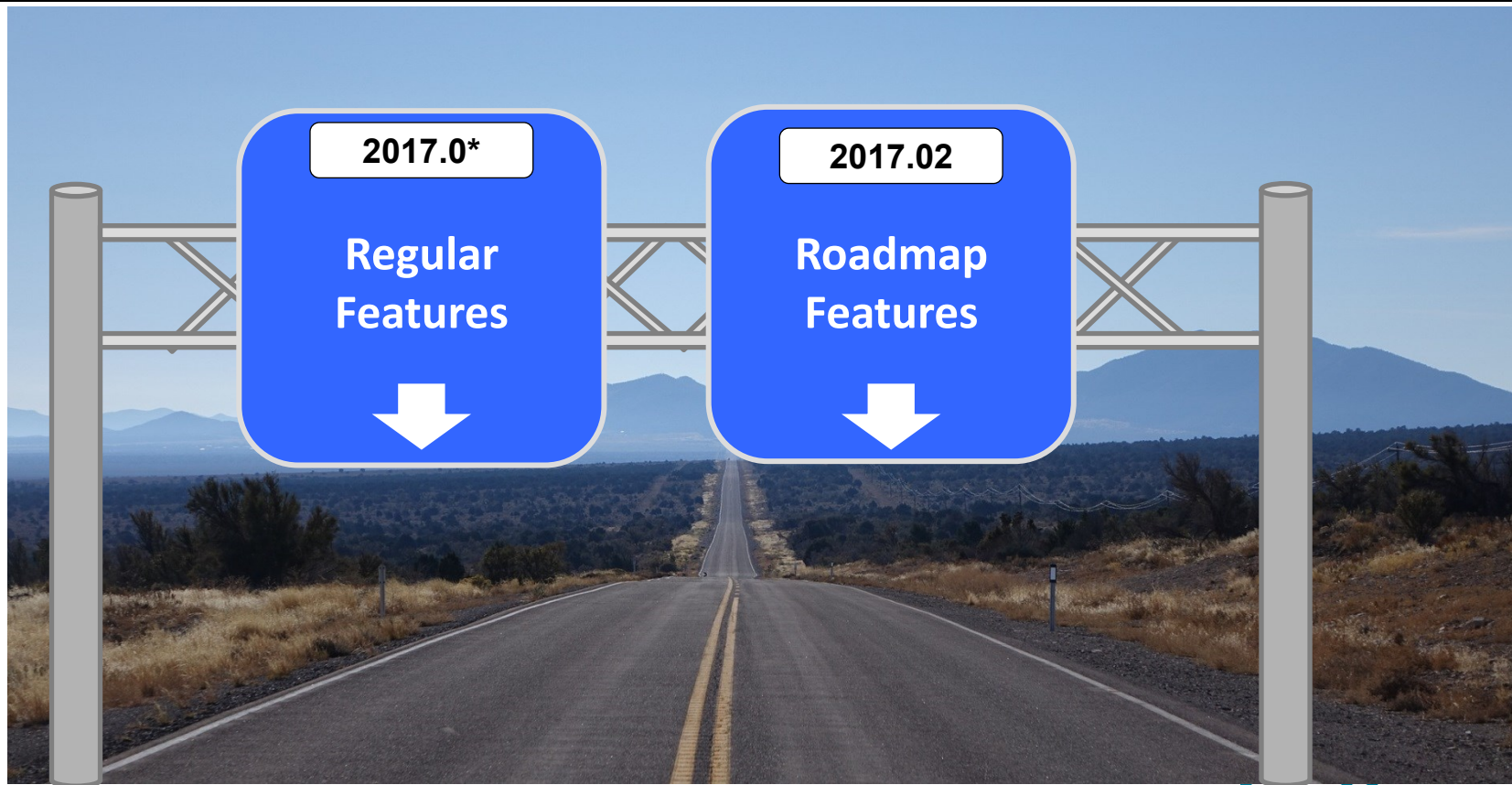
28th of June 2018

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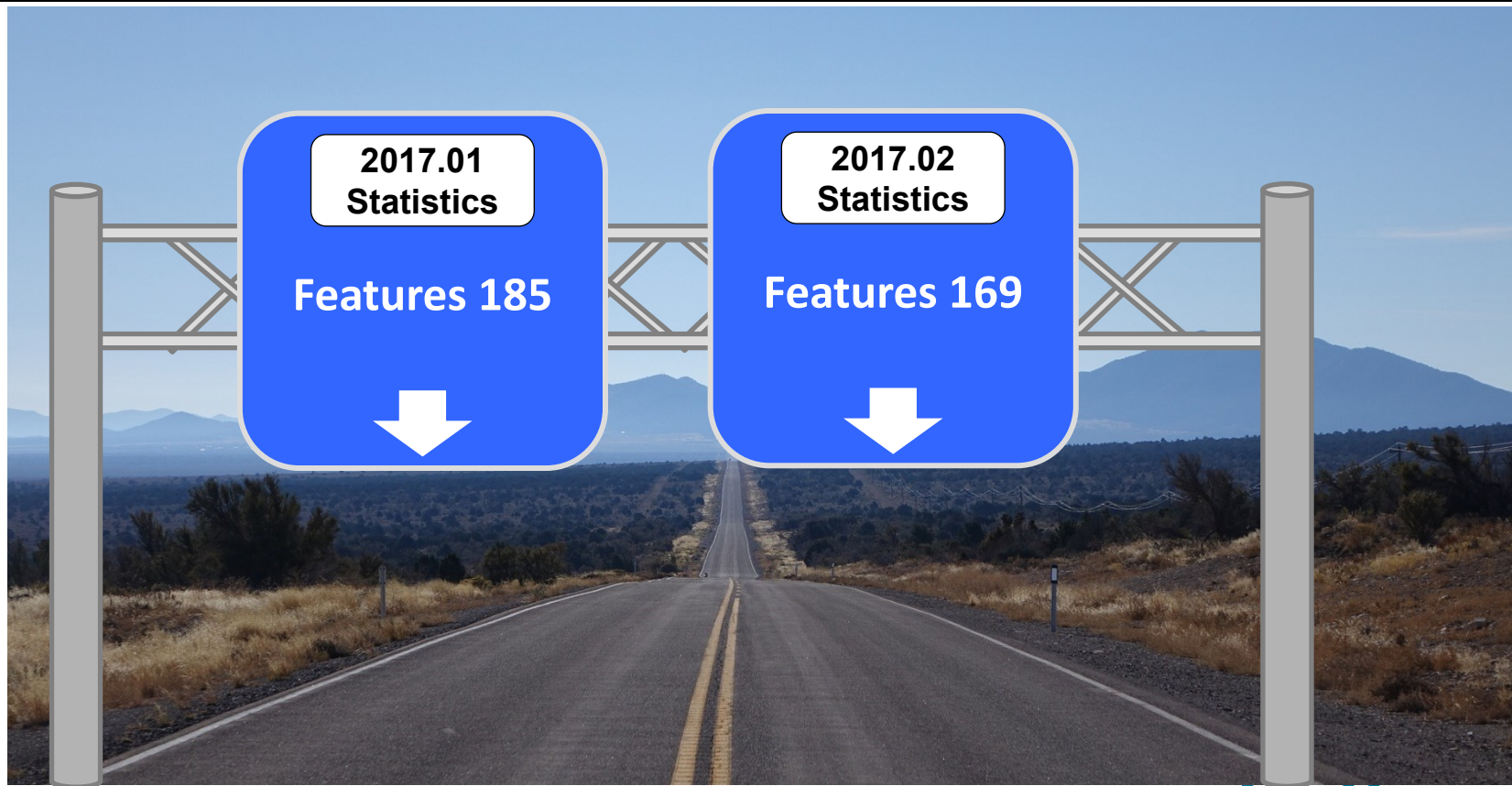
- Features (*Funktionen*)
- What else is new?
- Questions & discussion



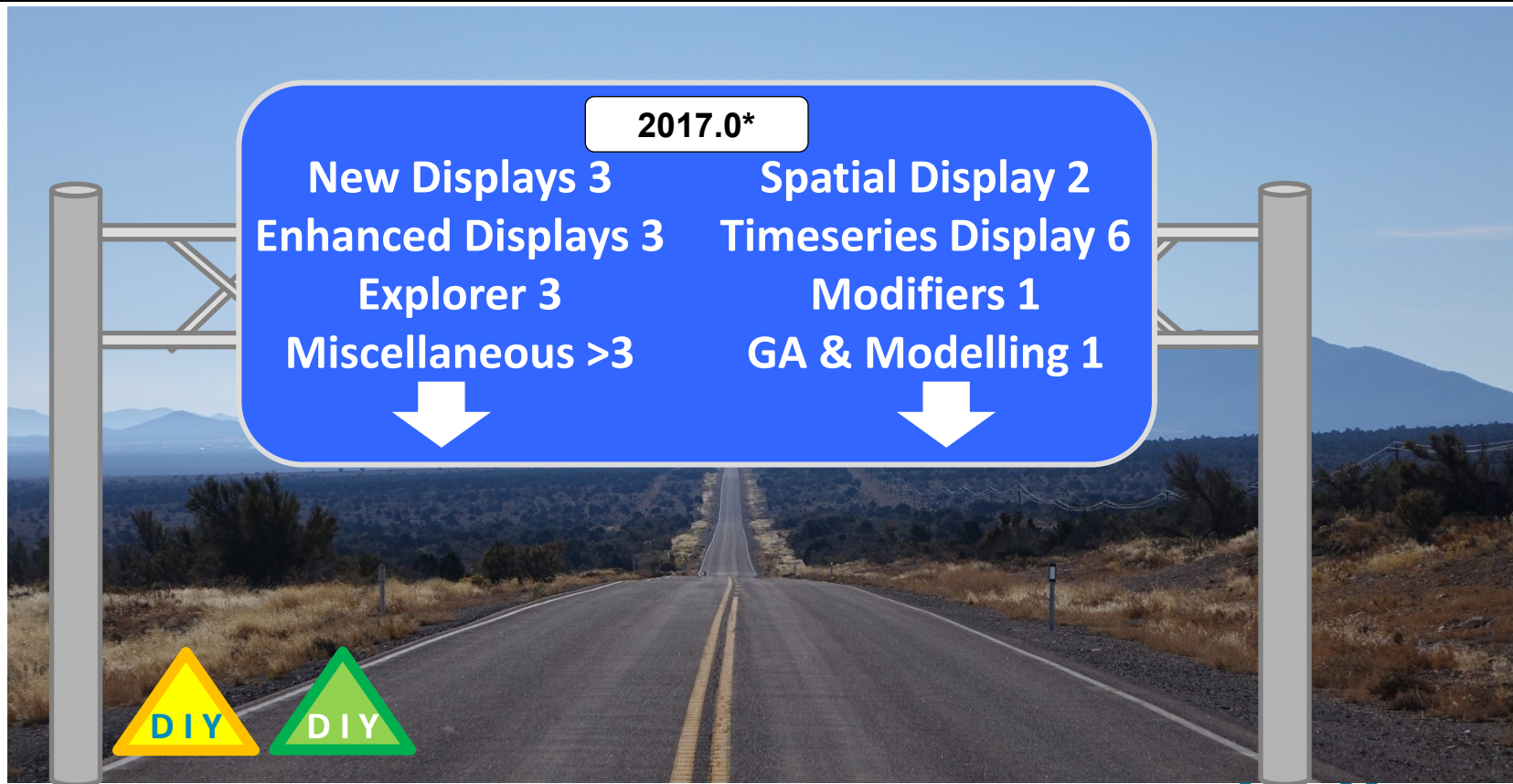
Where are we...(heading)?



What's new...?



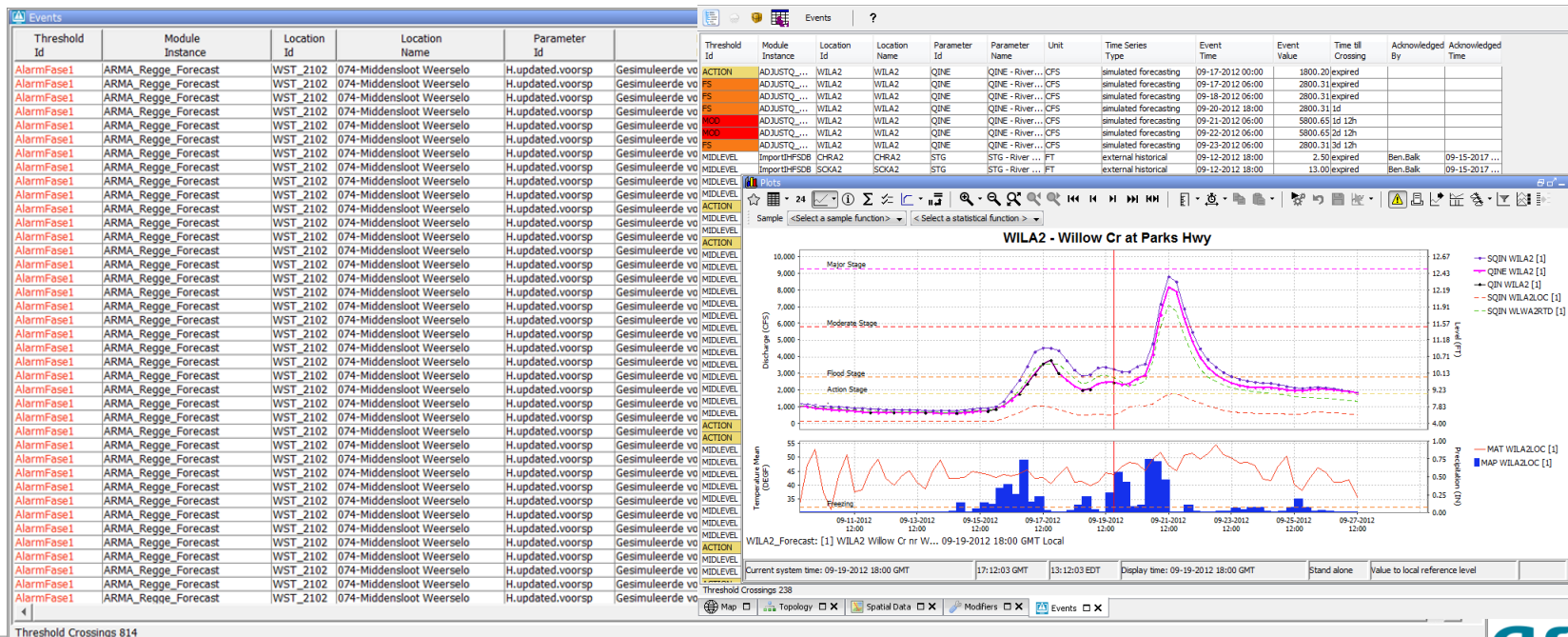
What's new...?



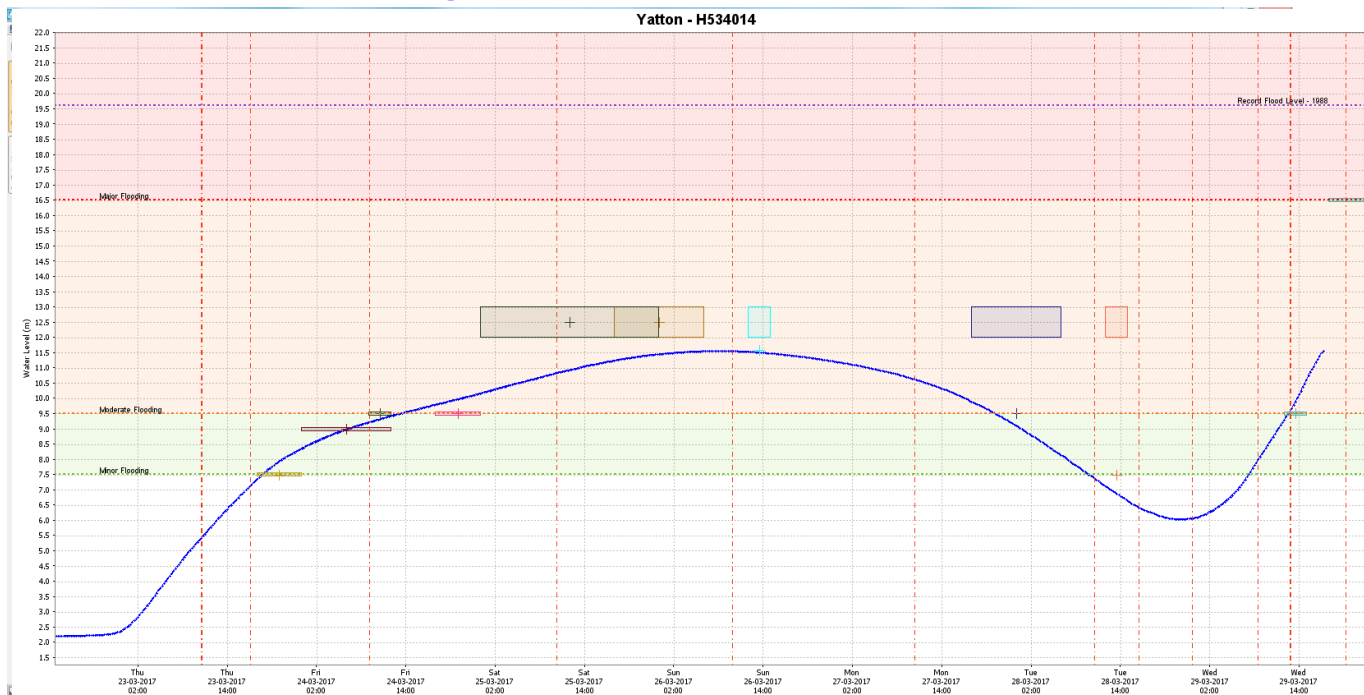
New Displays...



- System wide thresholds display containing an **overview** of all **Threshold Events** which can be **acknowledged** (+ acknowledge is **tracked**)



- Verification Analyst Tool



2017.0*

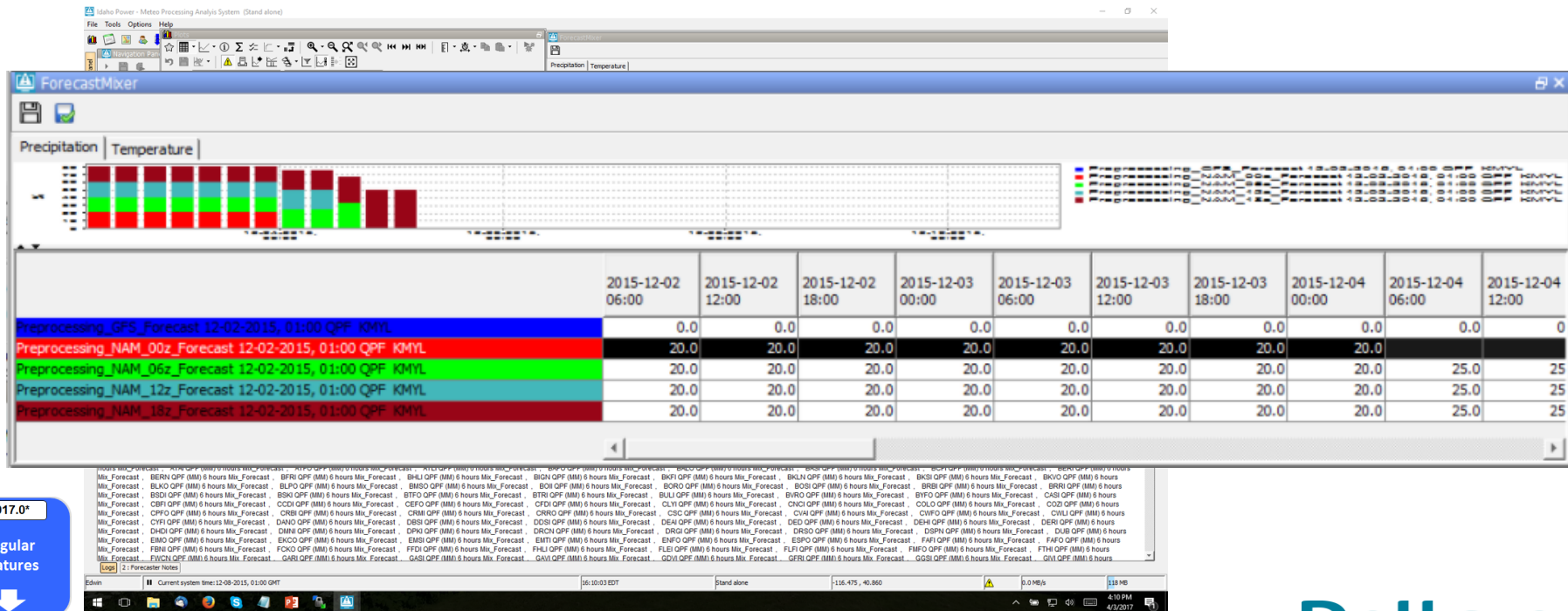
Regular
Features



New Displays...

DIY

- Forecast Mix Display: *blend* your own forecast...



2017.0°

Regular
Features



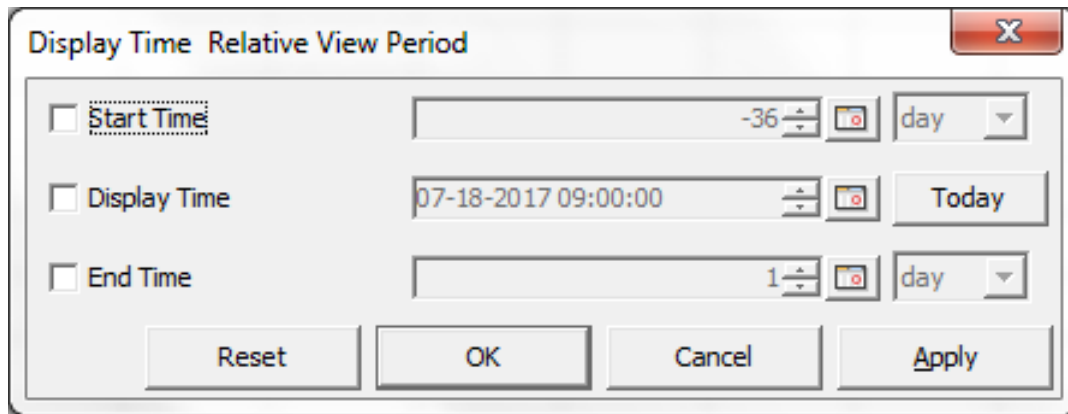
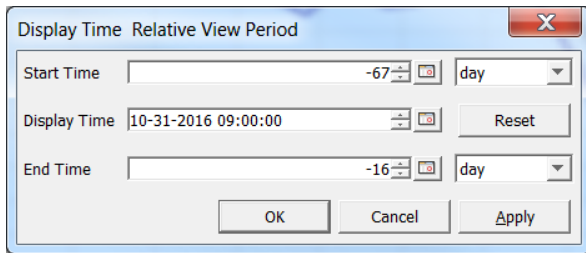
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Enhanced Displays...

DIY

- The **time window popup** used in the time series dialog and grid display is now **redesigned**.



2017.0*

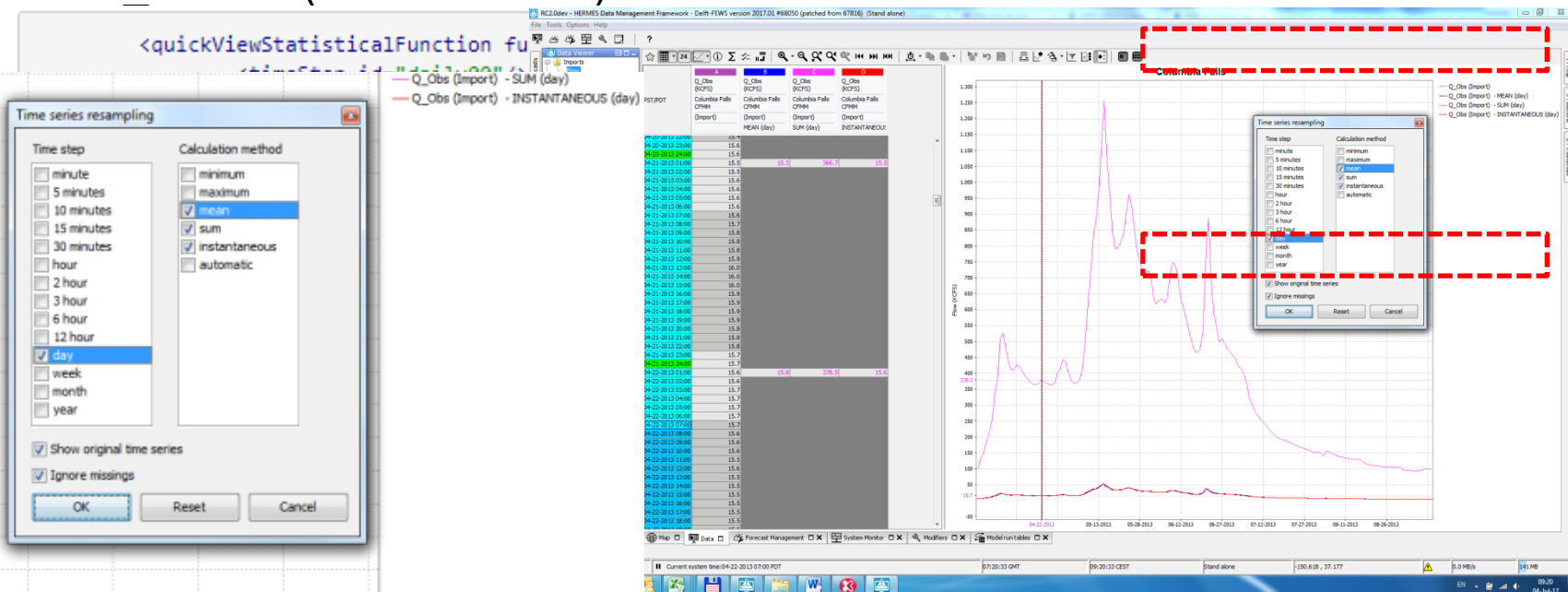
Regular
Features



Enhanced Displays...



- The **CalendarAggregationFunction** has now the option to **accumulate according to parameter type**: SUM (accumulative), MEAN (mean) or LAST_VALUE (instantaneous)



2017.0°

Regular
Features

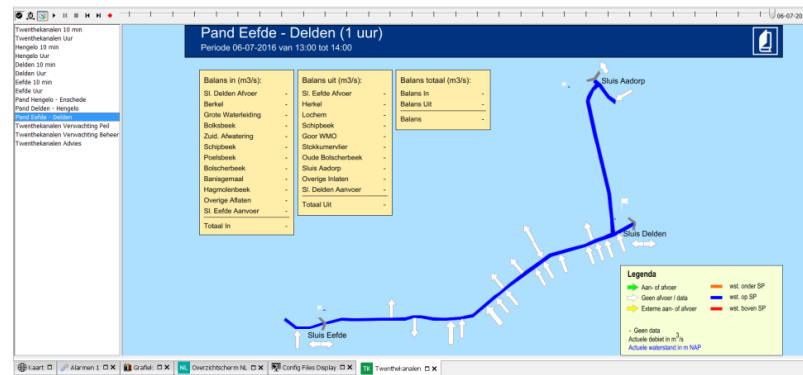
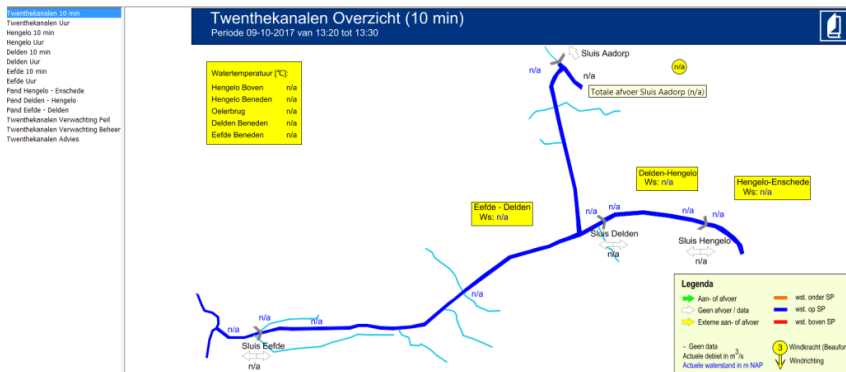


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Enhanced Displays...



- Schematic Data Display
 - **Background color** configurable
 - More **visible/clickable** no-data character
 - Use of **attributes** in the 'title' of the 'leftSingleClickAction'
 - Set **transparency** of SVG elements based on a time series



2017.0*

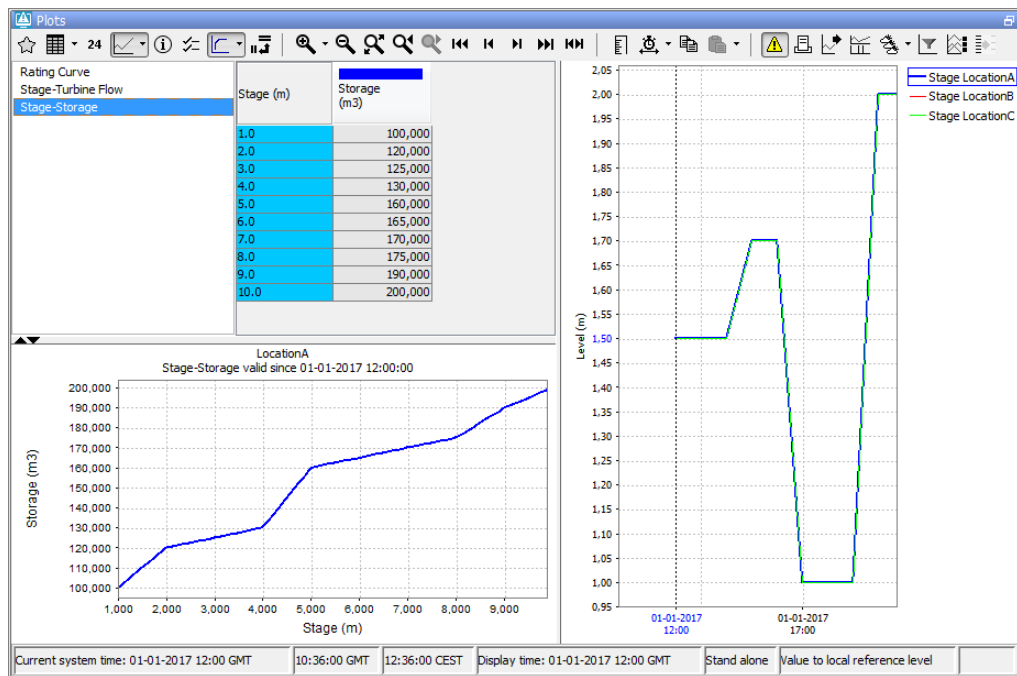
Regular
Features



Timeseries Display: features added...



- **ReservoirStorage curves** and any other curves can be stored in region config file **LookupTables.xml**



2017.0*

Regular
Features

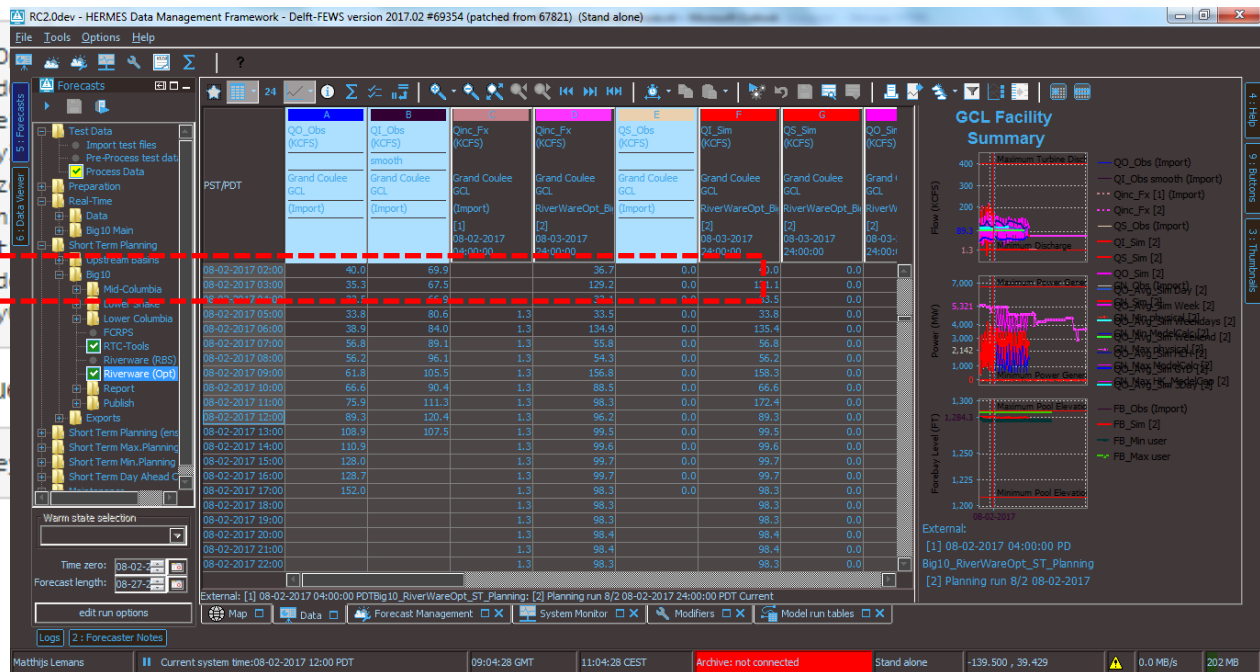


Timeseries Display: features added...



- Option to **configure** a custom background **color** in the table **header**

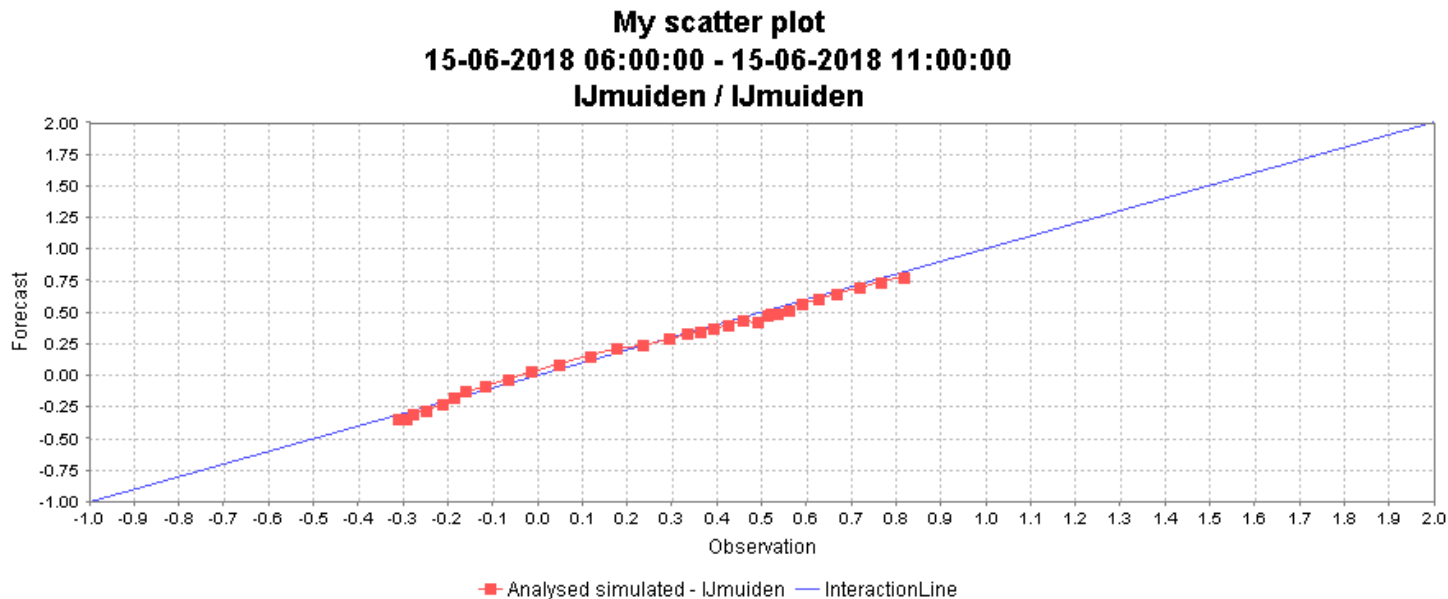
PST/PDT	A	B
	Q_Obs (KCFS) Bonners Ferry BFEI (Import)	Q_Obs (KCFS) Columbia Falls CFMM (Import)
11-09-2013 16:00	10.6	3.6
11-09-2013 17:00	10.7	3.6
11-09-2013 18:00	10.6	3.6
11-09-2013 19:00	10.6	3.6
11-09-2013 20:00	10.6	3.6
11-09-2013 21:00	10.5	3.6
11-09-2013 22:00	10.6	3.6
11-09-2013 23:00	10.5	3.6
11-09-2013 24:00	10.6	3.6
11-10-2013 01:00	10.6	3.6
11-10-2013 02:00	10.7	3.6
11-10-2013 03:00	10.6	3.6
11-10-2013 04:00	10.5	3.6
11-10-2013 05:00	10.6	3.6
11-10-2013 06:00	10.6	3.6
11-10-2013 07:00	10.6	3.6
11-10-2013 08:00	10.6	3.6
11-10-2013 09:00	10.6	3.6
11-10-2013 10:00	10.6	3.6
11-10-2013 11:00	10.6	3.6
11-10-2013 12:00	10.6	3.7



Timeseries Display: features added...



- Add functionality to **scatter plot** to show **multiple parameters** for single location



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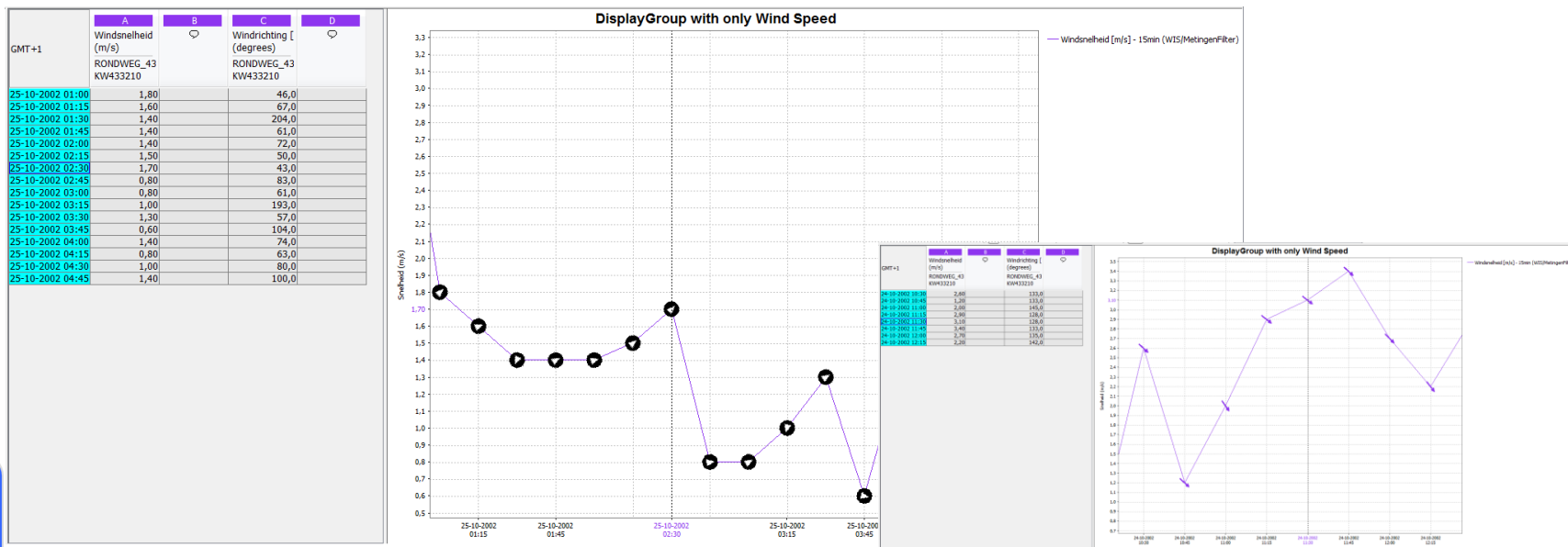
Regular
Features



Timeseries Display: features added...



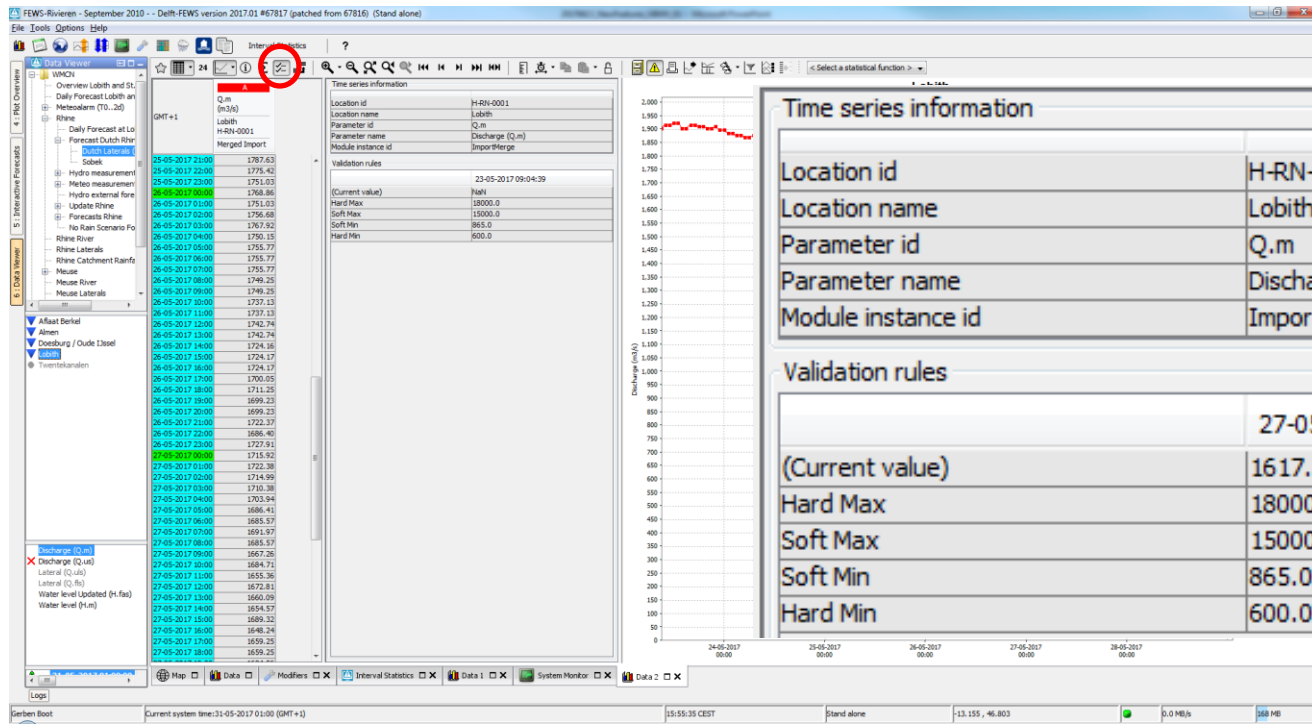
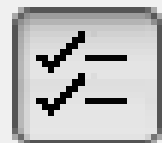
- Add **configuration option** for **whitespace** between (sub)plots
- **Timeseries Marker** as **icon** (for displaying **wind** direction as **arrow**)



Timeseries Display: features added...



- Show **validation rules** for **selected location**



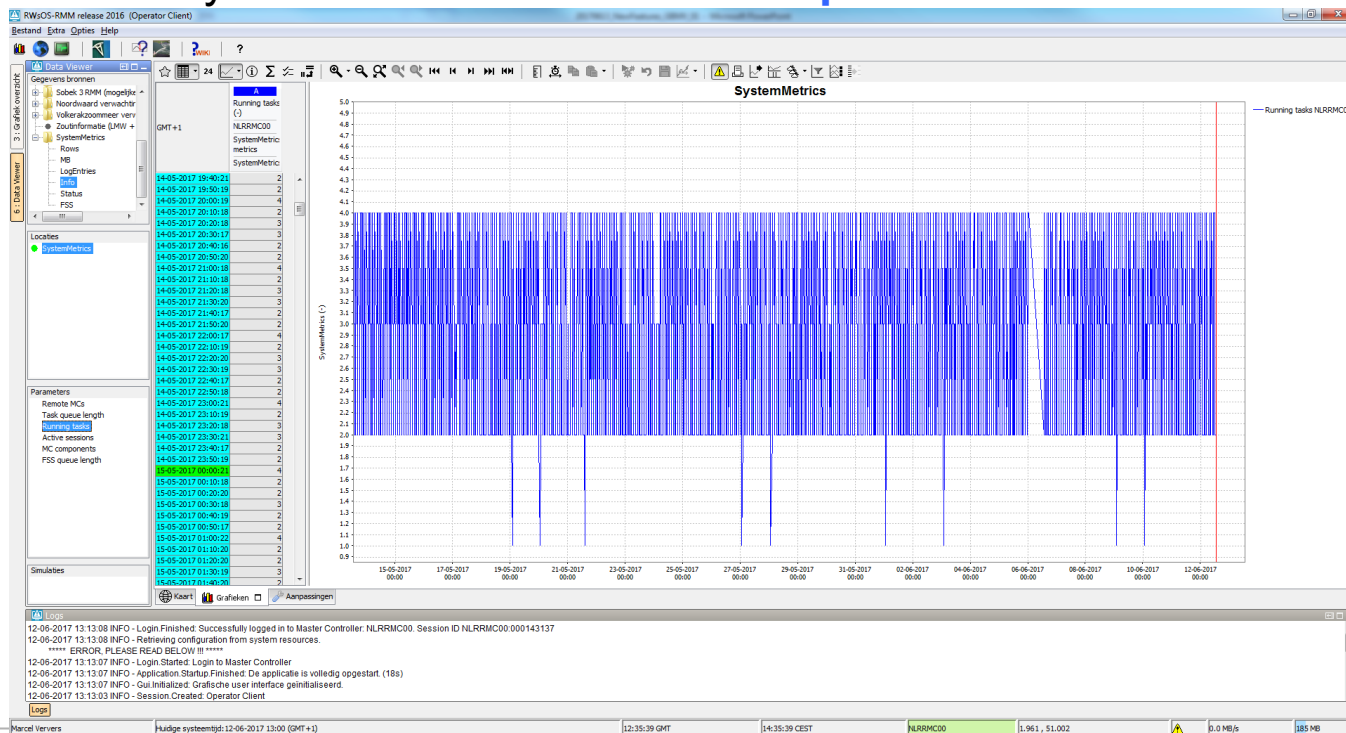
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27 juni 2018

Timeseries Display: features added...



- System **metrics** available in **Operator Client**



- Timeseries records
- Database records
- Database size (MB)
- Logentries
- Connected users
- FSS capacity usage

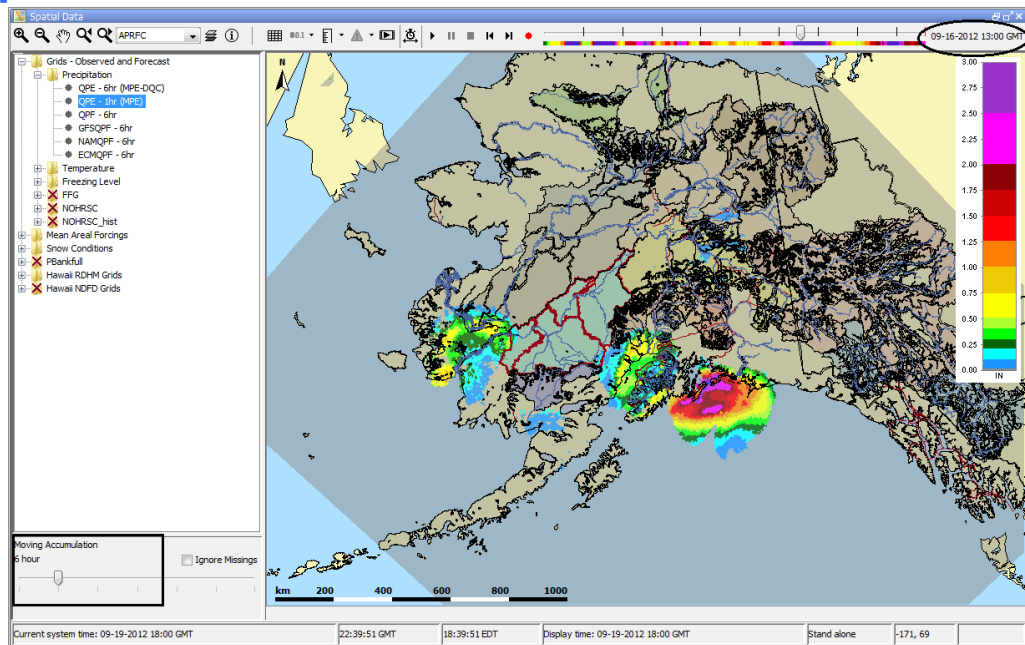
but also:

- MC / FSS status
 - FSS queue length
 - Size database tables
 - Nr spec. eventcode
- ... for all MC's

Spatial Display: features added...



- Using the **timeslider** in combination with **moving accumulation** slider only shows **common timesteps**



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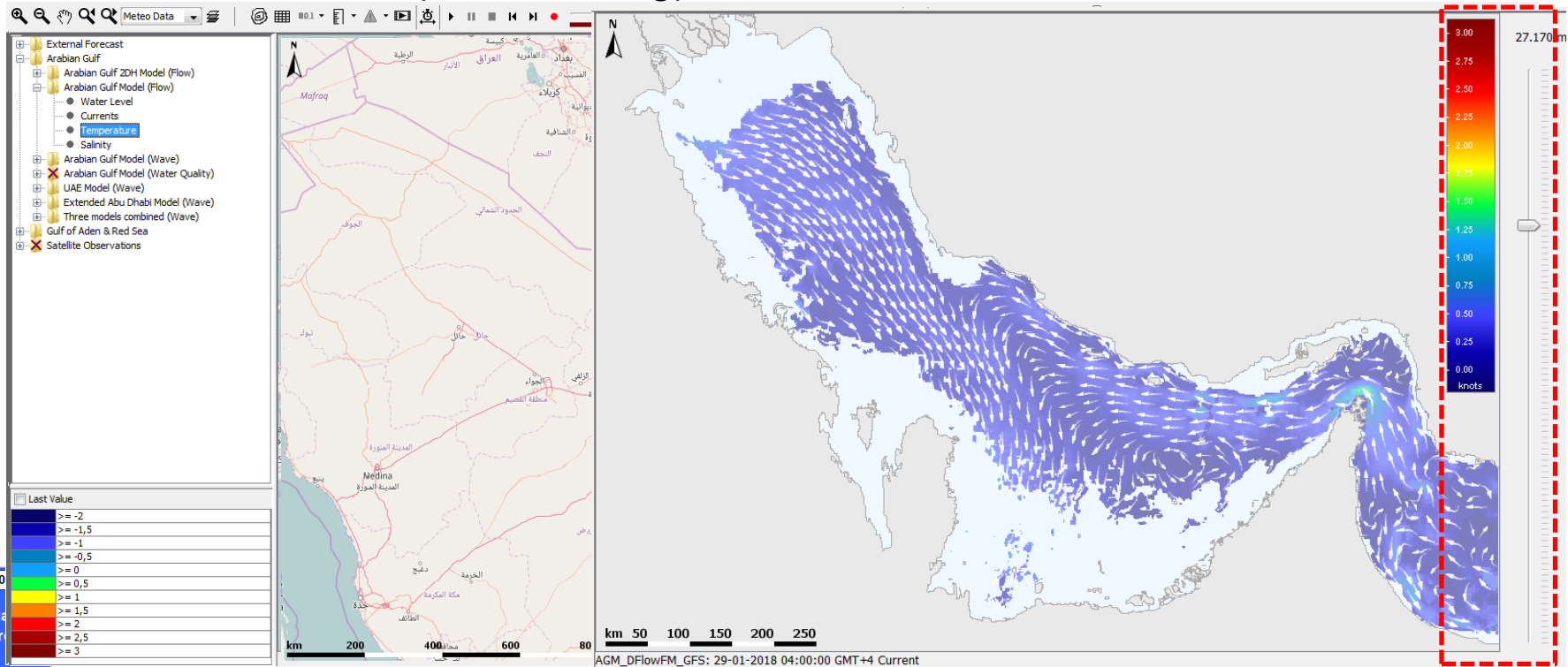
Regular
Features



Spatial Display: features added...

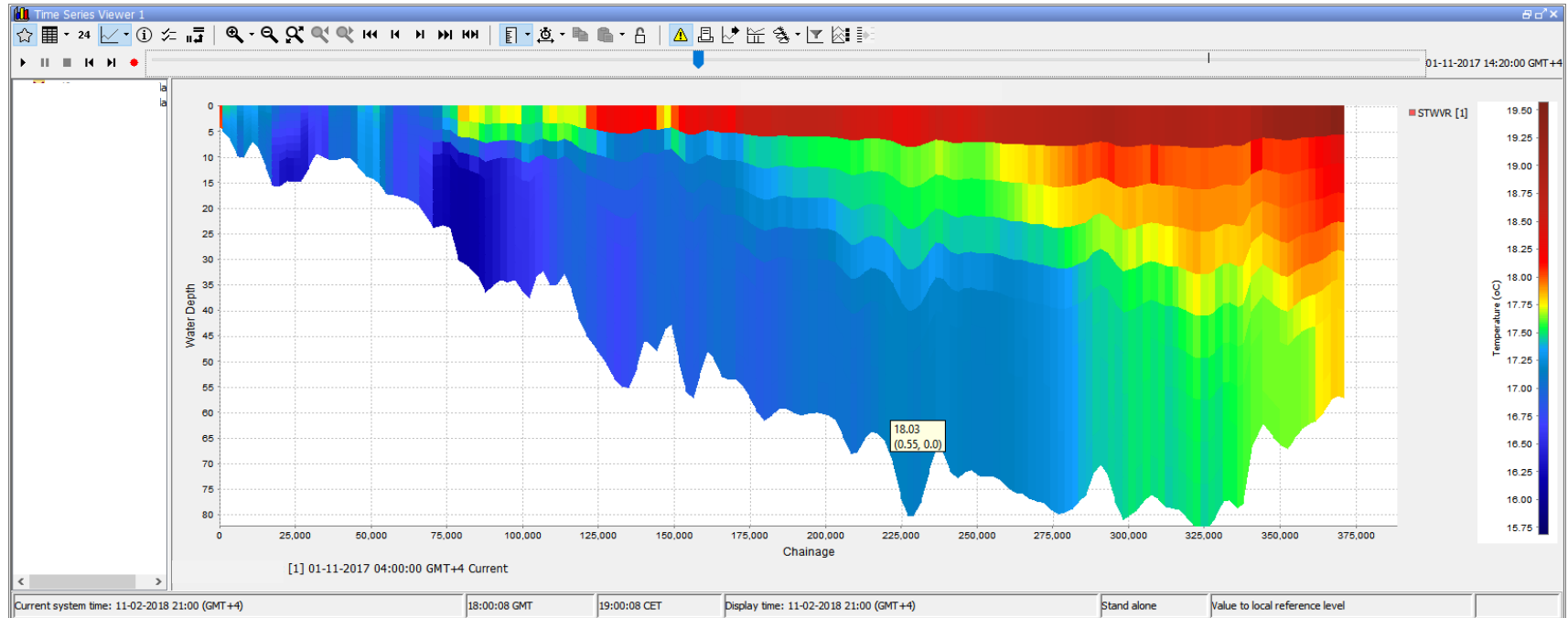
DIY

- **Vertical Slider** (3D modelling)



Spatial to Timeseries Display: features added...

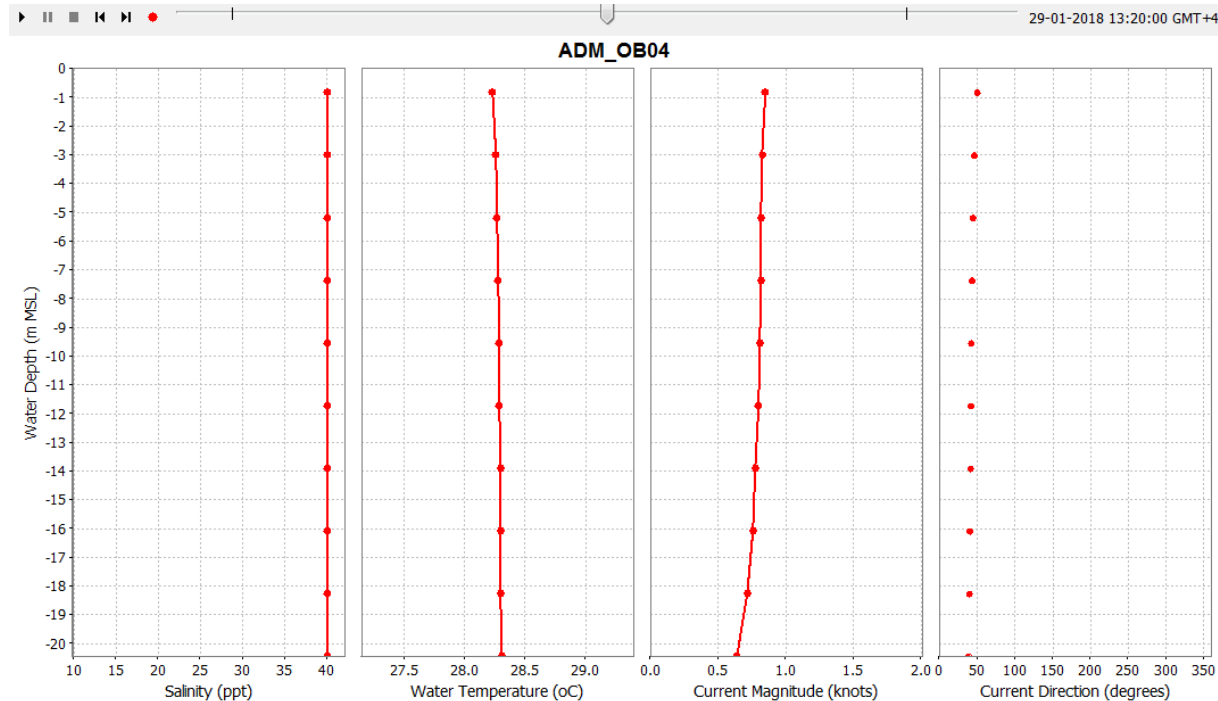
- 3D vertical cross section plot



Spatial Display: features added...



- **Vertical profiles:** on-the-fly (and pre-defined)



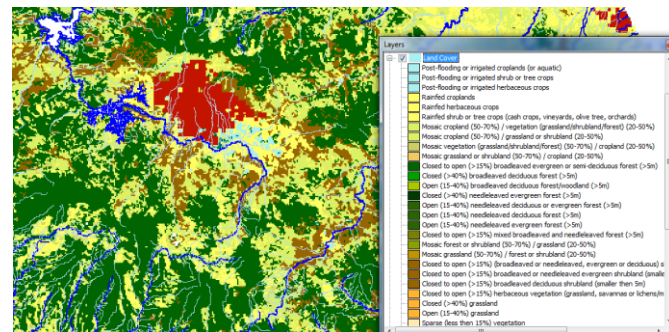
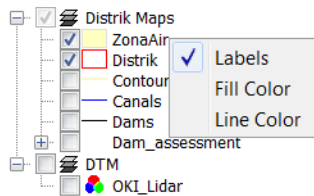
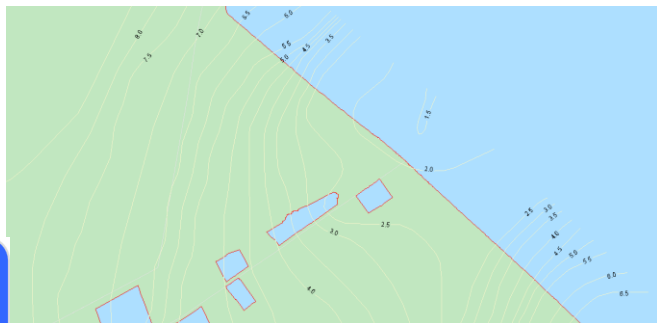
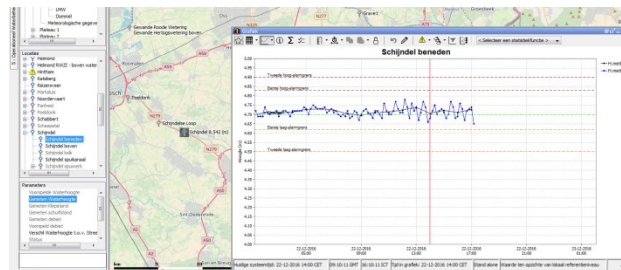
- 2017.0*
- Regular Features
- ↓



Explorer improvements...



- **Smart labeling** for line shapelayers
- Improvements to map **legend** (dockable & shows information on WMS layers)
- Option to make **labels (in)visible**
- Option to **add latest value to label**
- Add **MapExtentId** to **Gridplot**
- Enable **classification** of **point layers**



2017.0°

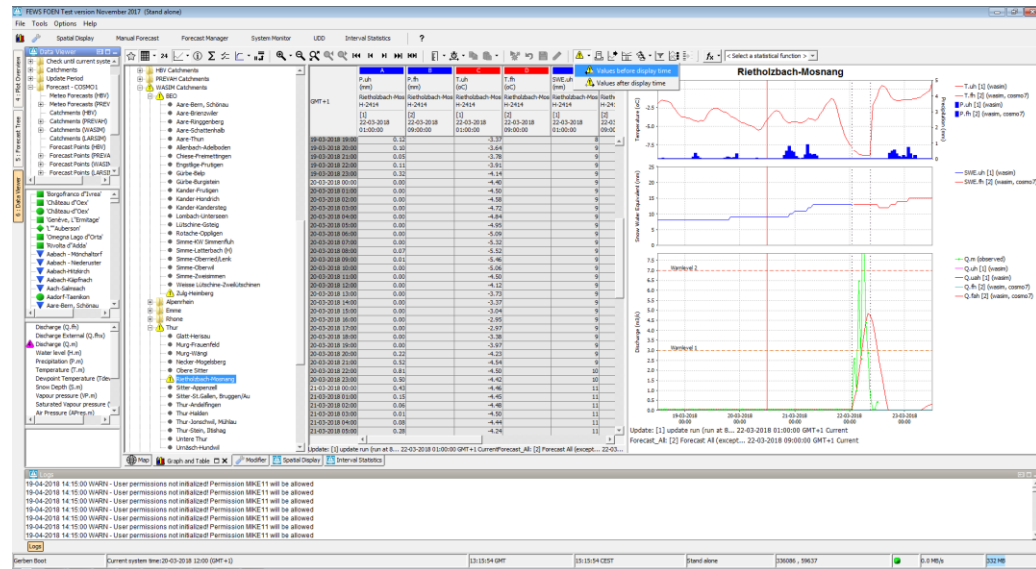
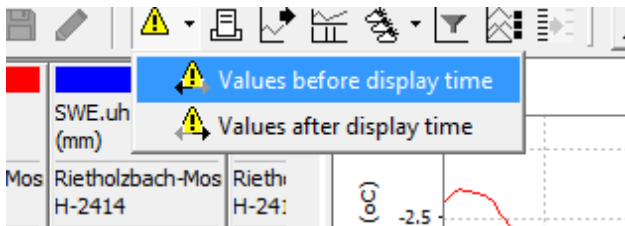
Regular
Features



Explorer improvements...



- Add feature to **disable threshold icons** in Filters and Map display
- Add a second **icon** to the icons of the shortcuts to know if **thresholds** are crossed **before** or **after** the **system time**



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Regular
Features



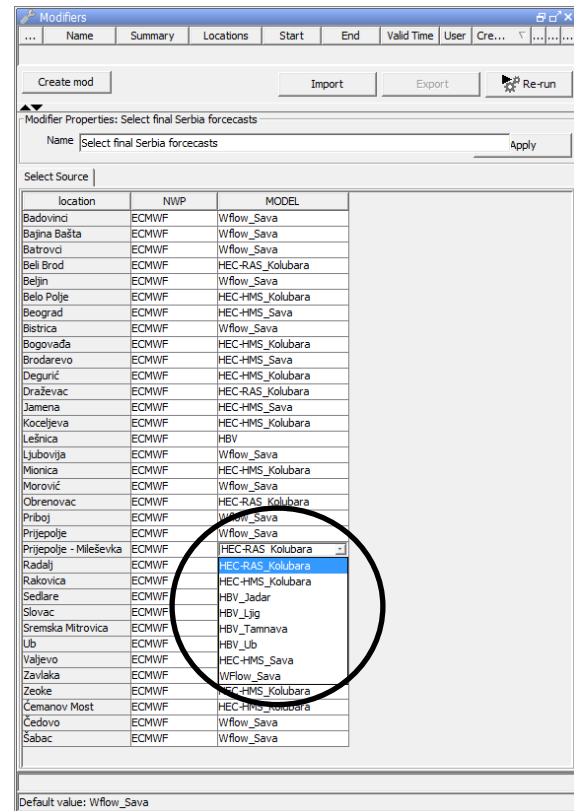
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Modifier enhancements...



- Location specific drop-down enumerations



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Regular
Features



- **Shape files** can now be **imported** as time series via the **importShapeFileActivity** in the **generalAdapter**

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSPY v2004 rel. 3 U (http://www.xmlspy.com) by rooij_e (WL | Delft Hydraulics) -->
<generalAdapterRun xmlns="http://www.wldelft.nl/fews" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.wldelft.nl/fews http://fews.wldelft.nl/schemas/version1.0/generalAdapterRun.xsd">
  <!-- General information for General Adapter run -->
  <general>
    <rootDir>$REGION_HOME$</rootDir>
    <workDir>%ROOT_DIR%/workDir</workDir>
    <exportDir>%ROOT_DIR%/exportDir</exportDir>
    <importDir>%ROOT_DIR%/polygon</importDir>
    <dumpFileDir>%ROOT_DIR%/polygon/dumpfiledir</dumpFileDir>
    <dumpDir>%ROOT_DIR%/polygon/dumpdir</dumpDir>
    <diagnosticFile>%ROOT_DIR%/diagnosticFile</diagnosticFile>
  </general>
  <activities>
    <importActivities>
      <importShapeFileActivity>
        <shapeFileImportDir>import</shapeFileImportDir>
        <fileDateTimePattern>'ImportShapeFileActivity_'dd MMM yyyy HH mm ss'.shp'</fileDateTimePattern>
        <geoDatum>EPSG:102736</geoDatum>
        <timeSeriesSet>
          <moduleInstanceId>ImportShapeActivity</moduleInstanceId>
          <valueType>see fugees</valueType>
        </timeSeriesSet>
      </importShapeFileActivity>
    </importActivities>
  </activities>
</generalAdapterRun>
```

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Regular
Features

- Add **power function** to time series **rating curves**

Discharge = CR * (STAGE – ALPHA) ^ BETA

(where 'cr' and 'beta' are rating curve constants, and 'alpha' is a constant which represents the stage corresponding to zero discharge)

```
<ratingCurve>
  <header>
    <locationId>LocA</locationId>
    <startDate date="2011-01-01" time="00:00:00"/>
    <stationName>LocationA</stationName>
    <stageUnit>m</stageUnit>
    <dischargeUnit>m3/s</dischargeUnit>
  </header>

  <stageToDischargePowerEquation minStage="0.02757" maxStage="0.5" cr="8.8605" alpha="0.02757" beta="1.8032"/>
  <stageToDischargePowerEquation minStage="0.5" maxStage="10.0" cr="8.8605" alpha="0.02757" beta="1.8032"/>
  <stageToDischargePowerEquation minStage="10.0" maxStage="999.0" flag="3" cr="17.7210" alpha="0.02757" beta="1.8032"/>
</ratingCurve>
```



- Development of the **hydrotel adapter**
- Development of the **Kisters Hydstra adapter**
- New **report tag**: “UserId”
- **HEC DSS** Export/Import
- Show **temporary timeseries** also in **WorkflowNavigator**
- **Interval Statistics** Display shows information in **displayUnits**
- **Seamless integration** of forecast series also in **PI Webservice**
- Ability to **configure major** and **minor gridlines** in Report charts
- **Seamless integration** of **forecast scalar timeseries** (observed already possible) with Open Archive
- ...



- Optimize
- Forecast
- Workflow
- Store sys
- SSD: “Sa
- System I
tab”
- Add pixe
- New imports: CMEMS, MODIS
- ...many more

Release Notes...

ime of workflow
available

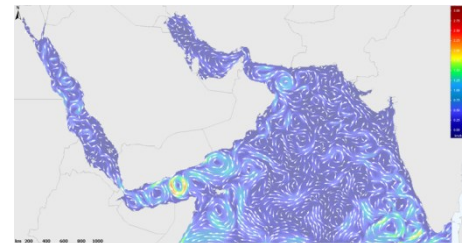
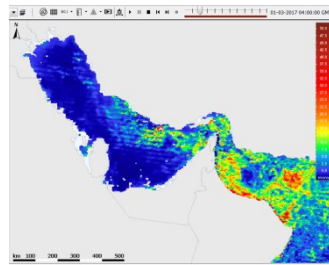
on
r “Import Status

y)



2017.0°

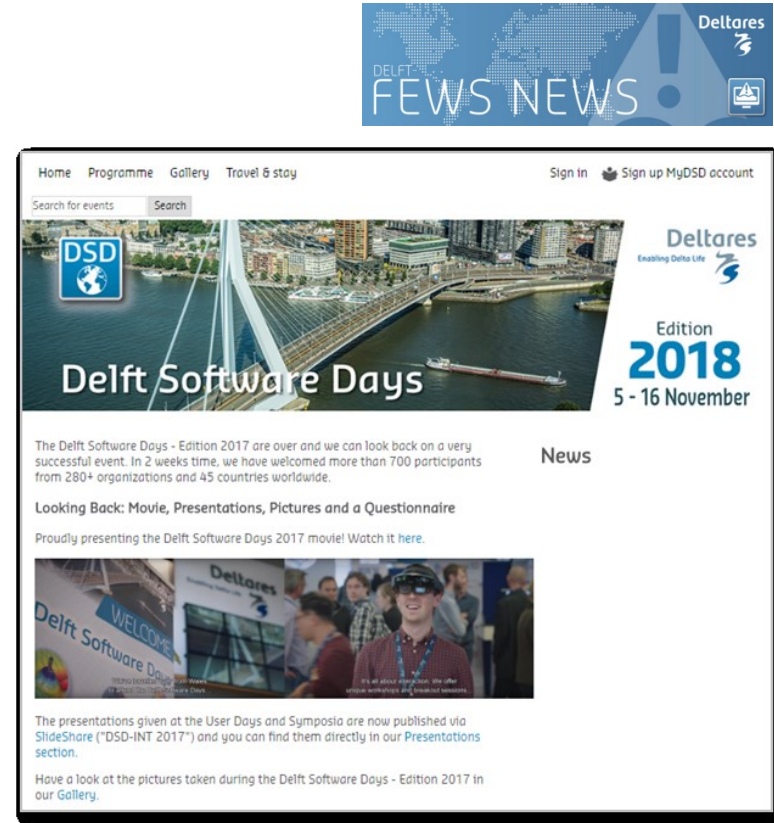
Regular
Features



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What else is new...?

- FEWS NEWS (2018 edition #2)
 - Subscribe at FEWS-news@deltares.nl
- New Course materials
 - WAQ
 - Deltares Open Archive & Delft-FEWS PI Webservice (online soon)
- New Webinars/instruction videos (6)
- www.delft-fews.com renewed
- Community Events
 - Delft-FEWS Int. User Days 7/8 Nov 2018 (with courses before & after)



Questions & Discussion

