

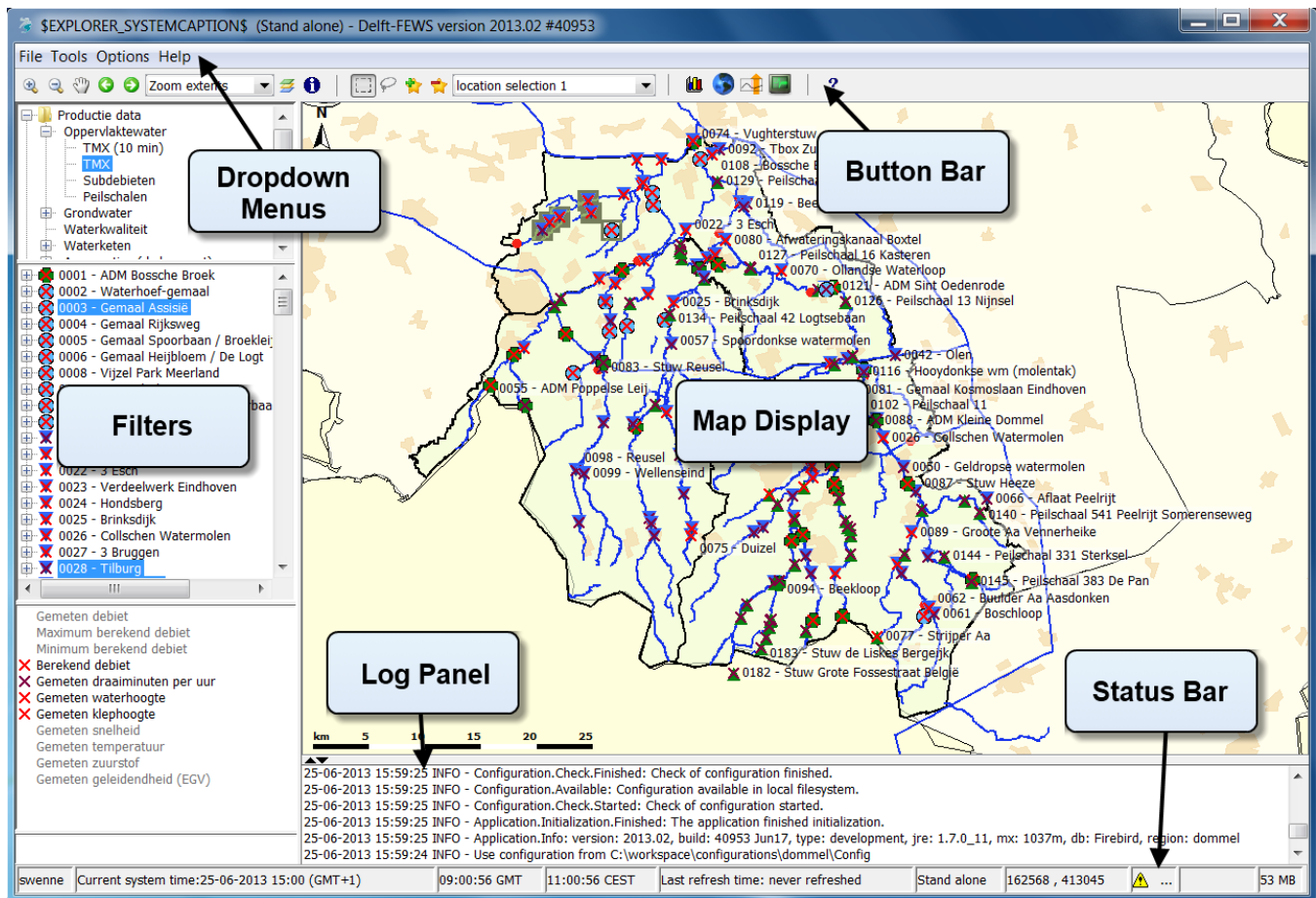
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FEWS Explorer

Overview

FEWS Explorer is the principal window of Delft-FEWS. The main elements of FEWS Explorer are highlighted in the figure below. All windows can be resized manually by dragging the mouse, or they can be undocked from the main screen, see [23 Interactive Forecasting Displays#23InteractiveForecastingDisplays-Dockablewindows](#)



Map display

The map display serves a double purpose. The first is to give an overview of the available locations given a combination of filters applied and to allow the user to select or deselect locations by clicking the location icon. The second is to provide a geographical background to the locations involved in the flood forecast.

Filters

The list boxes- also called filters- are required to identify the data to be displayed in a graph or table, or the icons on the map. There are four list boxes, from top to bottom:

- Time series groups
- Locations
- Data types (parameters)
- Forecasts

Drop down menus

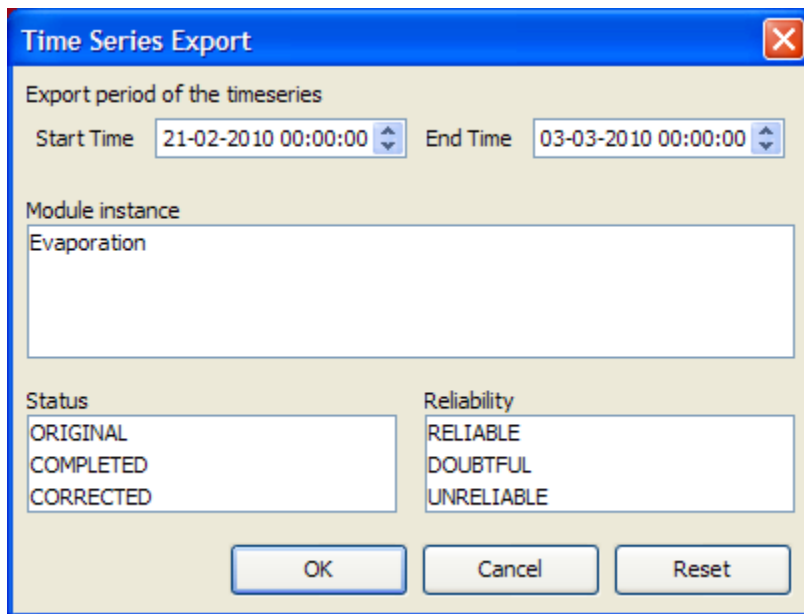
The drop down menu bar provides access to all displays configured for your configuration of FEWS.

File - Reload configuration (F5)

This menu option will reload the configuration, so changes to the configuration can be tested without the need to exit and restart FEWS Explorer.

File - Export timeseries

This menu option opens the Export timeseries dialog.



The dialog box is titled "Time Series Export" and has a close button (X) in the top right corner. It contains the following fields and controls:

- Export period of the timeseries:**
 - Start Time:** A date-time picker showing "21-02-2010 00:00:00".
 - End Time:** A date-time picker showing "03-03-2010 00:00:00".
- Module instance:** A text box containing the word "Evaporation".
- Status:** A list box containing three items: "ORIGINAL", "COMPLETED", and "CORRECTED".
- Reliability:** A list box containing three items: "RELIABLE", "DOUBTFUL", and "UNRELIABLE".
- Buttons:** At the bottom, there are three buttons: "OK", "Cancel", and "Reset".

This dialog can be used to filter the selected timeseries by view period, module instance, reliability and status. After the filter options are selected, the timeseries which match the given criteria are saved to a file.

When the user selects in the Export timeseries dialog the reliability "unreliable", then only export formats that write quality flags are available, i.e. PI xml files, CSV files with quality flags and Dutch CSV files with quality flags.

If "unreliable" is not selected in the export timeseries dialog, then all export formats are available. This is required, because if unreliable values would be exported without quality flags, then it would not be possible in the exported file to see which values are unreliable. In the case of csv format with quality flags, the complete text of the quality flags (including STATE and DETECTION flags, if they exist) are added to the timeseries.

All export formats available in the Export timeseries dialog are:

- PI xml
- GIN xml
- csv, Dutch csv
- csv with quality flags
- Dutch csv with quality flags
- iBever csv
- Hymos transfer DB 4.50 mdb
- Hymos transfer DB 4.03 mdb
- Menyanthes csv
- UM Aquo 2009 xml

Since 2015.01 from the Reliability list, MISSING can be selected. Missing values will only be exported if MISSING has been selected.

For more information, see: [Interactive Export](#)

File - Dock all undocked windows

Available since 2020.02. Clicking it docks all undocked windows.

File - Temporary import

Available since 2021.02. This provides a simple option to temporarily import files (PI XML, NetCDF or CSV format) so you can inspect files without first having to configure a specific import and display.

1D timeseries (scalar) can be imported using either PI XML or NetCDF, additionally the NetCDF format also allows the import of 2D grid data for a single time step. The imported data is not stored in the datastore and will be disconnected when you exit FEWS Explorer UI.

Please note that NetCDF is a very flexible format so not every NetCDF file will be imported successfully, FEWS will try to use the NetCDF CF convention to identify location, parameter and time related dimensions, for 1-D scalar data **NETCDF-CF_TIMESERIES** import type is assumed and for 2D grid data the **NETCDF-CF_GRID** import type is used.

For import of CSV format, some configuration is required, as a [Table Layout](#) needs to be defined to control which columns of the CSV file contain location ID, parameter ID and date / time information. The table layouts to use are to be configured in the explorer.xml config file, as in the following example:

```

</interactiveExportFormats>
<temporaryImportFormats>
  <temporaryImportFormat>
    <name>General CSV</name>
    <table>
      <dateTimeColumn name="DateTime" pattern="dd-MM-yy HH:mm" />
      <locationColumn name="Location" />
      <parameterColumn name="Parameter" />
      <valueColumn name="Value" />
    </table>
  </temporaryImportFormat>
</temporaryImportFormats>
<explorerTasks>

```

For the CSV import the [General Csv](#) parser is used, so it may be possible to copy the table definition from an existing CSV import configuration. Multiple table definitions can be configured, each with a given name, then the user will be prompted to select a table definition to use for the import.

Button bar

The Tool bar provides quick access to frequently used tools. Tools are plug-ins to FEWS Explorer. See [FEWSExplorer-StatusBar](#) for more information.

Log Panel

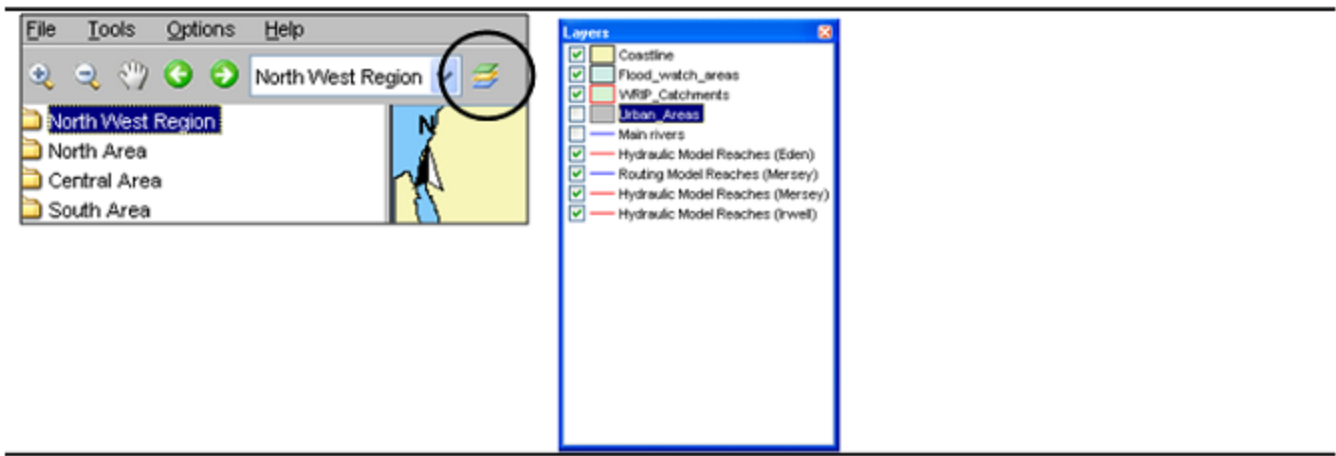
The Log Viewer relays high level messages generated by active system components. Additionally, detailed messages are available in the Log Browser.

Status Bar

The Status Bar provides information about the status of the forecasting system.

Map Display

Locations are displayed on top of the background map. The selected main filter determines which locations will be displayed. The background map may be configured to consist of stacked layering of various maps. For each map details about line types and fill colours may be set as well. Map layers can be disabled via the Layers button on the Button Bar..



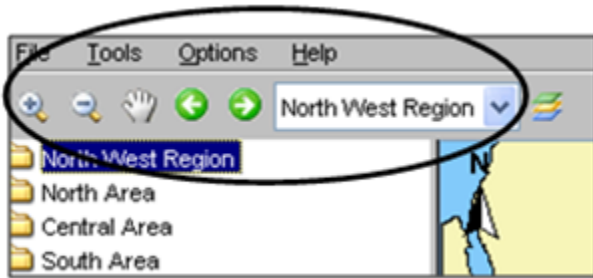
Tooltip

Information that is displayed when the user is moving the mouse cursor over a shape. To see this information turn on the 'I' button, in the button bar.

Map navigation

Map navigation options are set in the zoom toolbar item. After clicking the "button you can manually zoom in to a user defined map area. With the '-' button you can zoom out. Panning is possible after having clicked the *hand* button. From version 2008-01 the zoom in, zoom out and pan have been combined. After selecting the " button, drawing a box from top left to bottom right zooms in, while bottom right to top left zooms out. Holding down the right mouse button allows you to pan. The buttons for zoom out and pan remain for users with only one mouse button.

Returning and moving forward between previously selected zoom extents can be done after clicking the *arrow* buttons. The drop-down allows you to select pre-defined zoom ranges.



Please note that in case you want to leave the zoom or pan mode, you have to click the buttons again.

Zooming with scroll wheel

Alternatively, zooming can be done with help of the scroll wheel on the mouse (when available). Zooming in and out is done by respectively turning the scroll wheel away and towards for the user. The position of the cursor determines the centre point of the zoom action.

Distance ruler

With the ruler button you can measure a distance on the map

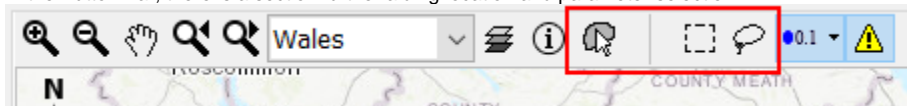


Selecting locations and parameters

Locations in the Map Display can be selected by clicking on their icon. When selecting a location in this fashion, the locations selected in the Filters (to the left of the map display) will be adjusted to correspond with the map display. Conversely, if a location is selected in the Filters, the selection in the Map View will be adjusted as well. Multiple locations can be selected by holding down the **[CTRL]** key while selecting.

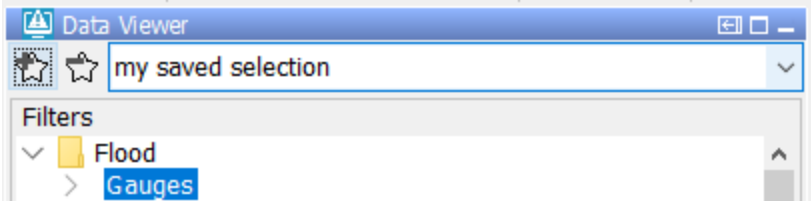
Parameters can be selected in the filter box below the locations filters. It's also possible to select multiple parameters by holding down the **[CTRL]** key while selecting.

In the Button Bar, there is a section further aiding location and parameter selection.



	Rectangle selection: When selected allows you to press left mouse button and drag to create a rectangular box over the Map Display. When released it will select all locations contained in the rectangle.
	Lasso selection: When selected allows you to create a freehand selection in the Map Display. Press and hold the left mouse button and drag around the locations you want selected. Release to make the selection.
	Select with map item selection: When selected allows you to select polygons on the Map Display. When hovering over a polygon, the polygon will be highlighted. If clicked, the locations related to the polygon will be selected.

There is also a button bar in the Data Viewer which allows storing selections you wish to reuse later.



	Add selection: Stores the current filter, location and parameter selection. A Pop-up will allow you to enter a name for this selection. After entering the name and pressing OK, the selection can be found in the dropdown box to the right.
	Remove selection: Removes the current item in the saved selection dropdown box to the right of this icon. If there is no current item, or it is empty, nothing will happen.
	Saved selection dropdown: When selecting an item from this list the filters, locations and parameters contained in that item will be selected in the Map Display and Data Viewer. Selections can be added or removed with the Add / Remove location selection buttons.

The stored selections endure a restart of FEWS and will only be deleted by manually removing them or when overwritten. The selections are stored in the user settings and will not be visible to other users. The toolbar in the data viewer can be hidden to preserve space by right-clicking one of the trees in the data viewer. The right-click menu contains a "Show ToolBar" menu item.

Note: In versions older than 2018.02, the buttons to store selections were located in the button bar of the map display instead. The stored selections only contained location and parameter selections, the selected filters were not stored. To update old stored location parameter selections with the selected filters, the selection will have to be recreated and re-added manually.

Show map layer information

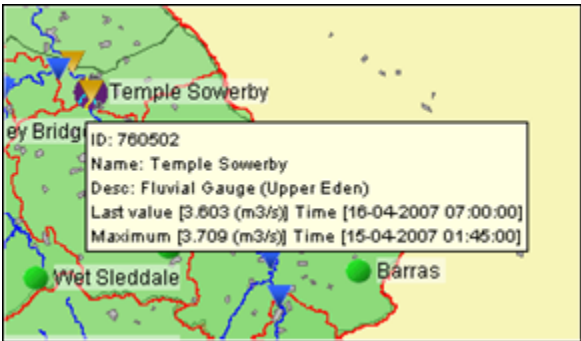
An icon on the toolbar can be pressed to activate the presentation of information for map layers as a tooltip. If a map layer has been configured such that it shows information from the dbf file, a user can show this information by clicking the information button.

Note
In case the zoom mode has been activated, the desired location will not be selected, but the map will be panned instead. The zoom or pan mode must first be deactivated by clicking the magnifying glass again.

When moving the cursor to a location, a tool tip will be displayed with the following information:

- Location ID
- Location name
- Site description
- Information about time series...
- Last available value and date & time of last value
- Maximum value (in view period) and date & time of maximum

An example is given below;



The tooltip shown above is the default tooltip. Within Delft-FEWS it is possible that the tooltip has been configured differently to e.g. display a picture of the location. Consult the documentation of your local system or the Delft-FEWS [configuration guide \(locations\)](#) for more information.

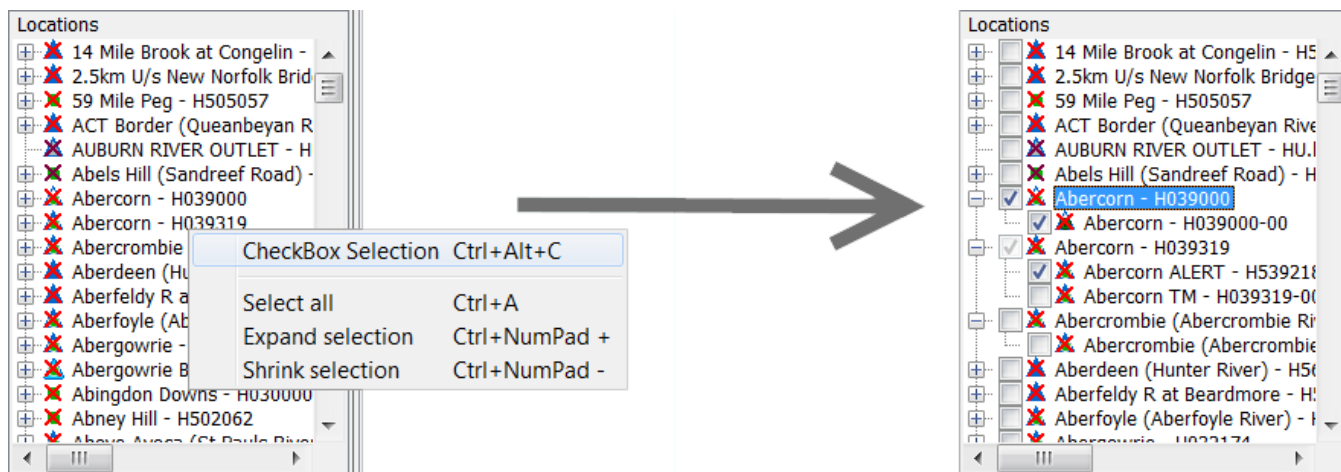
Filters

The filters are the 4 list boxes at the left hand side of the FEWS Explorer. The filters are used to select the data to be displayed in a graph or table. Your selection can be filtered by making one of more choices in the list boxes.

Using Check box selection

Locations, parameters and qualifiers have the ability to be selected with check boxes. To do so, right click on the windows for which you want the check box selection and select "Show check box selection".

With check box selection, selecting the label does not select the item. You will have to check the checkbox to select the item. A greyed out selected checkbox means that one, but not all locations associated with the local branch (the parent and its children) are selected. Like in the normal selection mode, it is possible in check box mode to select only the children without the parent.



Visibility of locations and parameters

The context menu of the listboxes includes the option Show only selected [CTRL ALT O]. This option restricts the visibility of locations and parameters in the listbox to the elements that are selected at the moment this option is chosen. In case of locations, the visibility in the map is also restricted. The visibility of all elements can be restored using the option Show All [CTRL ALT A]. It should be noted that these options require the listbox tree to be rebuilt; in check box selection mode, this leads to collapsing all children, except for the element with focus (dashed box).

Selection of location types

Time series sets can be selected in the upper filter. Time series sets are configured groups of locations with similar data types. The locations with the selected time series set(s) will be displayed on the map display and listed in the *locations* filter, the second list box. The data types associated with the locations are displayed in the *data types* filter, the third list box.

To select a list of multiple locations, hold down the [SHIFT] key between the first and second selection. Hold down the [CTRL] key to select multiple location types individually.

Using the right mouse button or a shortcut key, some context menu options become available:

- Select All [CTRL A] : Select all locations.
- Expand selection: [CTRL Numpad +] : A popup is shown where the selected locations can be expanded using a wildcard search. The wildcard characters are "*", matching zero or more characters, and "?", matching exactly one character. All matching locations will be selected. For example, "Maas km 1?.00" will match "Maas km 10.00", "Maas km 11.00", etc., but not "Maas km 101.00". As another example, "Maas km 1*" will match "Maas km 10.00", "Maas km 11.00", etc., but also "Maas km 100.00", "Maas km 101.00", etc.
- Shrink selection: [CTRL Numpad -] : A popup is shown where the selected locations can be shrunk using a wildcard search (using * and ?). All matching locations will be deselected.

Locations list box

The locations associated with the selected main filter(s) are shown in the locations filter. Selected location will be highlighted on the map by means of a blue square. Locations can also be selected in the map display.

Location related icons are displayed on the map as well as in front of the location names.

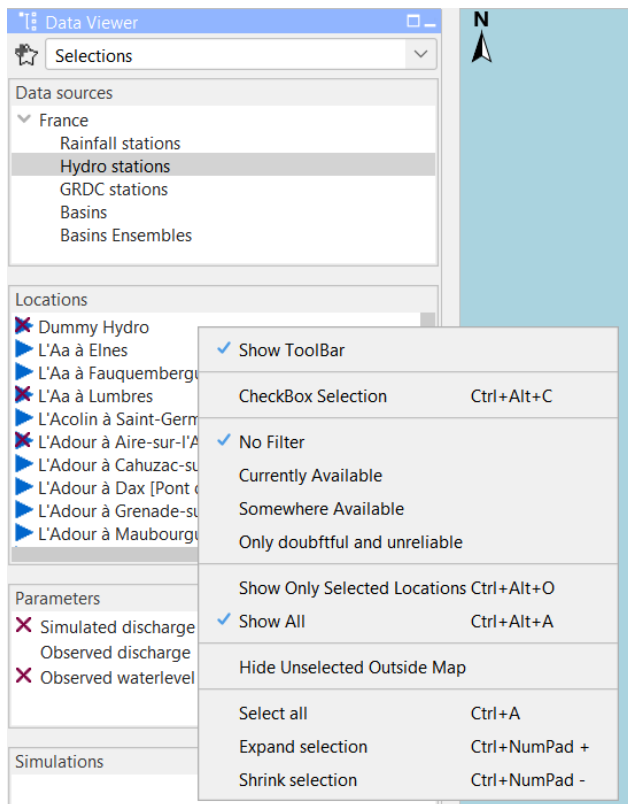
Different icons are used to display locations and give information about the availability of data and about the hydrological status of the locations. More information about location related icons is given below in a separate section.

The location list box has its own context menu. e.g. you can toggle the "Hide Unselected Outside Map". The content of the location list is updated while panning or zooming the map and this menu item is checked.

It is also possible to filter locations that have data "currently available", this means there is data within their configured view period of the filter.

Filtering locations by "Somewhere available" means that there is data either within or outside their configured view period of the filter.

Filtering locations by "only doubtful and unreliable" means that only locations are visible for which there is unreliable or doubtful data within their configured view period of the filter. This can be useful when this data still needs to be manually validated.



Data types list box

The data types associated with the selected main filter(s) are shown in the data types list box.

Selecting one or multiple data types causes the location list box to be updated regarding the potential availability of data, as shown by the icon displayed to the left of the location.

When depending on the selections made no data is available for a particular location or parameter its name is greyed out.

To select a list of multiple data types, hold down the **[SHIFT]** key between the first and second selection. Hold down the **[CTRL]** key to select multiple data types individually.

Using the right mouse button or a shortcut key, some context menu options become available:

- Sort by name: Sort all data types by name.
- Select All [CTRL A] : Select all data types.
- Expand selection: [CTRL Numpad +] : A popup is shown where the selected data types can be expanded using a wildcard search (using * and ?). All matching data types will be selected.
- Shrink selection: [CTRL Numpad -] : A popup is shown where the selected data types can be shrunk using a wildcard search (using * and ?). All matching data types will be deselected.

Forecast list box

The forecast list box displays forecasts that have been selected for viewing with help of the Forecast Manager. By highlighting one or more forecasts in this filter you can display them in graphs and tables.

Please note that- although not visible in the forecast list- the *current forecast* is always selected by the system. Icons related to the current forecast will be displayed on the map. The current forecast will also always be shown in the time series display. Selection of the current forecast is described in the section about the *Forecast Manager*.

The selection of forecasts in the Forecast list box can be removed by clicking the right mouse button with the cursor placed in the forecast list box. A pop-up menu appears with 'Remove all'. Pressing this menu item will remove the list of forecasts from the list box. Please note that this will just remove the selection but will not remove the actual forecasts from the database.

Location related icons

Locations related icons can refer to the following types of information:








- Location type icons
- Data availability icons (validation information)

- Hydrological status icons (threshold information)

Location type








For different types of locations different icons can be configured to allow for easier identification. Please note that only a single location type icon can be defined per location. In case for example various data types are available at a certain location that relate to different icons, the choice has to be made which icon will be displayed.

In Delft FEWS the following location icons have been chosen but in principle any icon could be chosen to represent a location type in FEWS.

	gauged fluvial site
	ungauged fluvial site
	meteorological site
	radar data site
	coastal site
	catchment centre point
	default site

Data availability and validation

Data availability icons show what kind of data is available for the timeSeries selected in a filter.

	no data stored in database (also when looking outside of the view period)
	only missing values available in view period
	only missing values available in view period for some time series (configurable since 2011_02; see someSeriesCompletelyMissingIconVisible in the Explorer file)
	some missing values available in view period
	soft validation limit exceeded
	hard validation limit exceeded
	data edited or interpolated

 Although the icon descriptions are always true, there are some common assumptions that are not always correct. Following are some examples and an elaboration with details why it's not true.

- "If a timeSeries contains only missing values (also when looking outside of the view period), it will have a purple cross". This often results from the missing values not being stored in the database but are deduced (i.e. for an equidistant time steps). However, missing values that are the result of a manual adjustment *are* stored in the database.


- "If a timeSeries has a red cross, there are some values available, just not in this view period". The only reason a red cross is not a purple cross is because data are stored in the database (for the timeSeries). But besides values there are also other data stored for a timeSeries, like expired forecasts or the example shown above. These two "data" examples are not an exhaustive list and are not meant to be, but they show that this assumption is not correct.

- "A red cross means that one will see no data in the timeSeries display (or the other way around)". The selected filter determines the view period that is used to determine which data availability icon should be shown. This view period configured for a filter does not have to be the same as the view period for the timeSeries displayed in the timeSeries Dialog. If the relative view periods are the same, then the assumption *can* be used.

If both a data availability icon and validation icon are valid - both will be shown concurrently. By default only the red crosses are shown; add the tag to the [Filters](#) file to display the additional validation icons.

Hydrological and meteorological status

In case the high flow thresholds or rainfall thresholds are exceeded somewhere in the configured view period, the following icon is displayed.






	a threshold exceeded in view period
---	-------------------------------------

The threshold status icons are only displayed for the *current forecast* or selected forecast and observed data.

Together with the threshold icons information is displayed on the map to inform the forecaster on:


- the timing of the threshold crossing (historic or forecast period),
- the severity of the threshold crossing.

There are 5 extra icons pre-configured for 5 threshold levels that are merged with the original threshold icon. These extra icons are:

	Level 1 threshold crossing in historic and forecast period
	Level 2 threshold crossing in historic and forecast period
	Level 3 threshold crossing in historic and forecast period
	Level 4 threshold crossing in historic and forecast period
	Level 5 threshold crossing in historic and forecast period

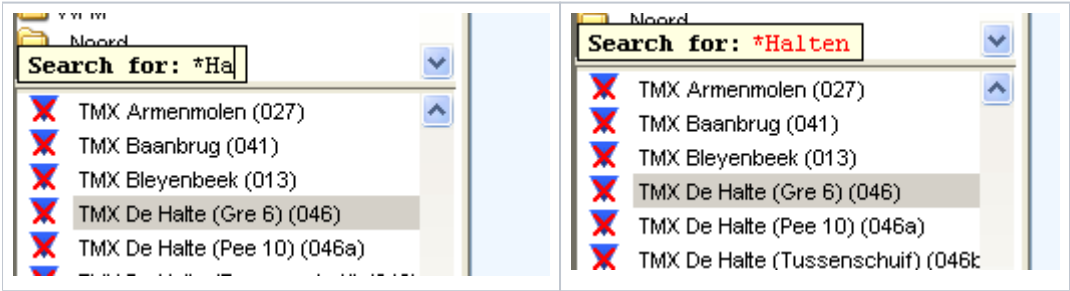
For a level 3 threshold crossing in the historic period the combined threshold icon for a location will look as follows:



Since 2017.01 a button is available to turn of the threshold icons, it can be recognized by its icon: . While this button is activated, the threshold icons are shown on the map (as normal). When the button is deactivated, the threshold icons will be deactivated, thus allowing the location type and data availability and validation icons to become visible.

Search in list boxes

It is possible to search elements in the list boxes. Select the appropriate list box and start typing the search criteria, see examples below. The cursor jumps to the next element *starting* with the letters you typed; in determining a match a closing asterisk "*" is implied. You may also use the asterisk "*" explicitly in the search criteria, for example if you do not want to start with the first character of the elements in the list box. When the search criteria turns red, the search criteria can not be found.



By using the up and down arrow keys you can jump to the next element in the list boxes that match the search criteria.

Log Viewer

The Log Viewer provides information about the status of tasks run by the system. The messages that are displayed by the Log Viewer- called *System Messages*- are meant for both end users and system managers. Typical system logs are the successful start and finish of a module run.

The following type of system messages are identified:

Log level	Description
Fatal	Severe errors that cause premature termination
Error	Other runtime errors or unexpected conditions
Warn	Events that are undesirable or unexpected, but not necessarily wrong
Info	Runtime events (startup/shutdown) that allows tracking of the progress of the system

Per message, the Log Viewer provides the following information:

- Log level (see table above)
- Time of creation
- Event code
- Log message

Further sorting and assessment of the messages can be done with help of the system Monitor (see also *System Monitor*).

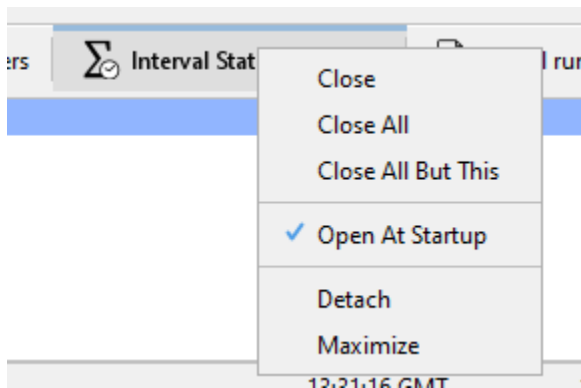
A System Manager can configure the system to also provide *Debug Messages*. These are used to log application internal events for system development and management. Typical debug events are the creation of a database connection or exceptions that occurred due to programming or configuration errors.

All messages listed in the Log Viewer can be removed from the display (not from the Local Data store) clicking the right mouse button with the cursor placed in the Log Viewer panel. Now two selections can be made:

- *Clear Messages* will remove all messages from the panel
- *Save As* will allow you to save the messages in the Log Panel to file

Tabs

"Open At Startup" menu item. When the tab is already opened at startup by explorer configuration this menu item will not be available. The last selected panel in a schematic status display is now saved in the user settings. The last selected tab is also saved in the user settings to make this feature more powerful



Status Bar

The Status Bar provides information about the status of the forecasting system. The information that is displayed can be defined by the user via the Options menu (see also *Options*). Some information is always visible.

The following information can be displayed:

Operator name (always displayed)

The name of the operator that has logged in is displayed.

Current system time

The current system time is the time in which the system 'lives'. The current system time moves forward in the so-called "Cardinal Time Step". In the live system the current system time will generally be the same as the current time. For analysis purposes, the system time can be set back in the standalone system to simulate a particular situation in the past.

When the system time is set back, only information- e.g. observed data and external forecasts- will be available to the system with a time stamp before the set system time. In case an hindcast for a particular flood is made with the *system time set back* to for example 13:00 on 21 January 2004, only data, that where imported into the database before this time will be used by the system. The system behaves as if the current time was 13:00 on 21 January 2004. When part of the required import data streams were missing at that moment but have been received later, they are *not* used in the analysis.

In case however, the same analysis is done *without setting back the system*, all data until the current time will be available for the analysis. This means that in this case also the above mentioned missing import data will be used in the analysis.

► Current system time:03-11-2020 16:00 PDT

If configured, a "pause" button is visible that allows the user to freeze the current system time, even on an OC.

Background colors current system time

- purple: Application is busy updating the icons in the data viewer / map the background is purple.
- yellow: Application is busy updating the IFD / Forecast tree icons
- terracotta: The system time in the application is paused

Local time

The actual computer time. This is the time the user configures in the regional settings of windows.

GMT time

If configured, also the current time in GMT is presented.

Time of last refresh (only relevant for OC)

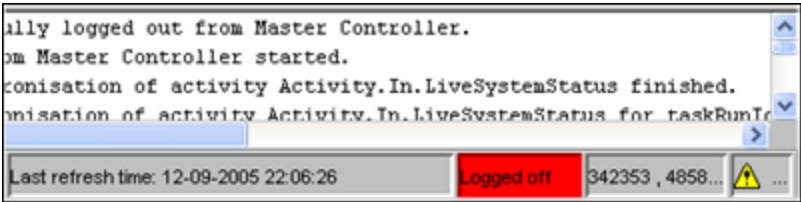
The time of last refresh indicates the last time the local data store has been synchronised with the Central Database. Not relevant for Stand alone FEWS configurations.

System status

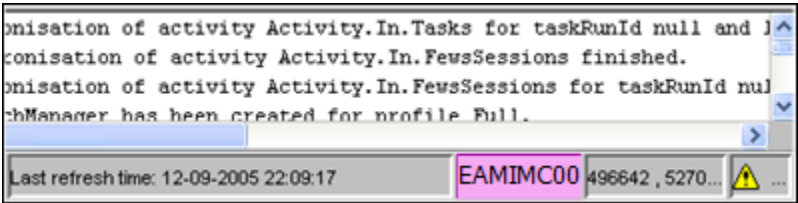
The system status indicates in what mode the system is currently operating: online, or stand-alone.

In the live system the following colour information indicates the state on synchronisation:

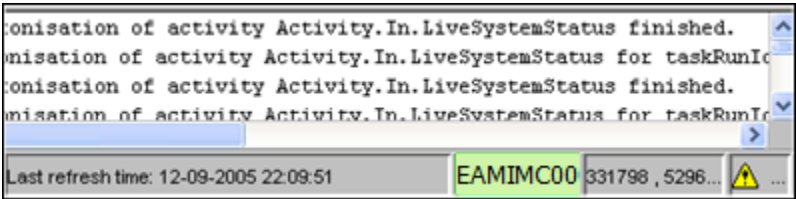
- In case the colour is red, the OC is logged off:



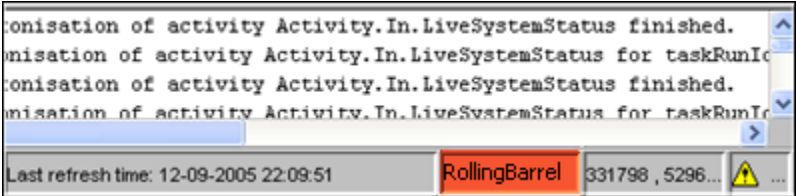
- In case the colour is soft purple, the OC is synchronising with the MC displayed in system status box:



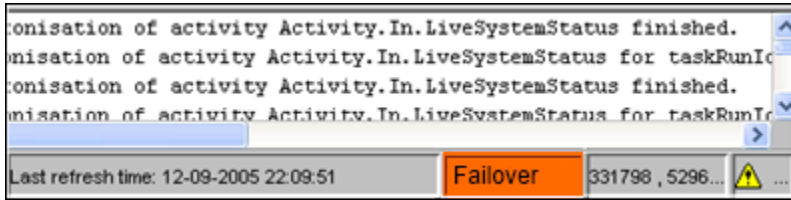
- In case the colour is soft green, the OC is logged on and fully synchronised with the MC displayed in system status box:



- In case the colour is tomato, the OC is running the Rolling Barrel (system maintenance) in order to remove expired data from the local datastore.



- In case the colour is orange, the MC which the OC is logged into is in failover mode, either manually or because the FSS's are down.






Mouse coordinates

Mouse coordinates displayed in the configured coordinate system

System status icon (always displayed)

The System status icon- in the lower right corner of the display- indicates whether the system operates normally or that severe errors are encountered. The icon has the following display modes:

Icon	Color	Description
	Green	System is running normally but warnings have been encountered.
	Yellow	System encountered severe errors in the past 48 hours. This means that at least one system message has been generated with log level ERROR. After all messages with this log level have been acknowledged by the user via the System Monitor (see also <i>System Monitor</i>), the icon becomes green again.
	Red	System encountered fatal errors in the past 48 hours. This means that at least one system message has been generated with log level FATAL. After all messages with this log level have been acknowledged by the user via the System Monitor (see also <i>System Monitor</i>), the icon becomes green again.

Notification (default disabled)

Since 2007.02, the Explorer can be configured to provide a popup type notification to show completion of manually dispatched tasks. The popup appears in the lower left screen corner, reporting the name of the job dispatched as well as its success or failure.

