

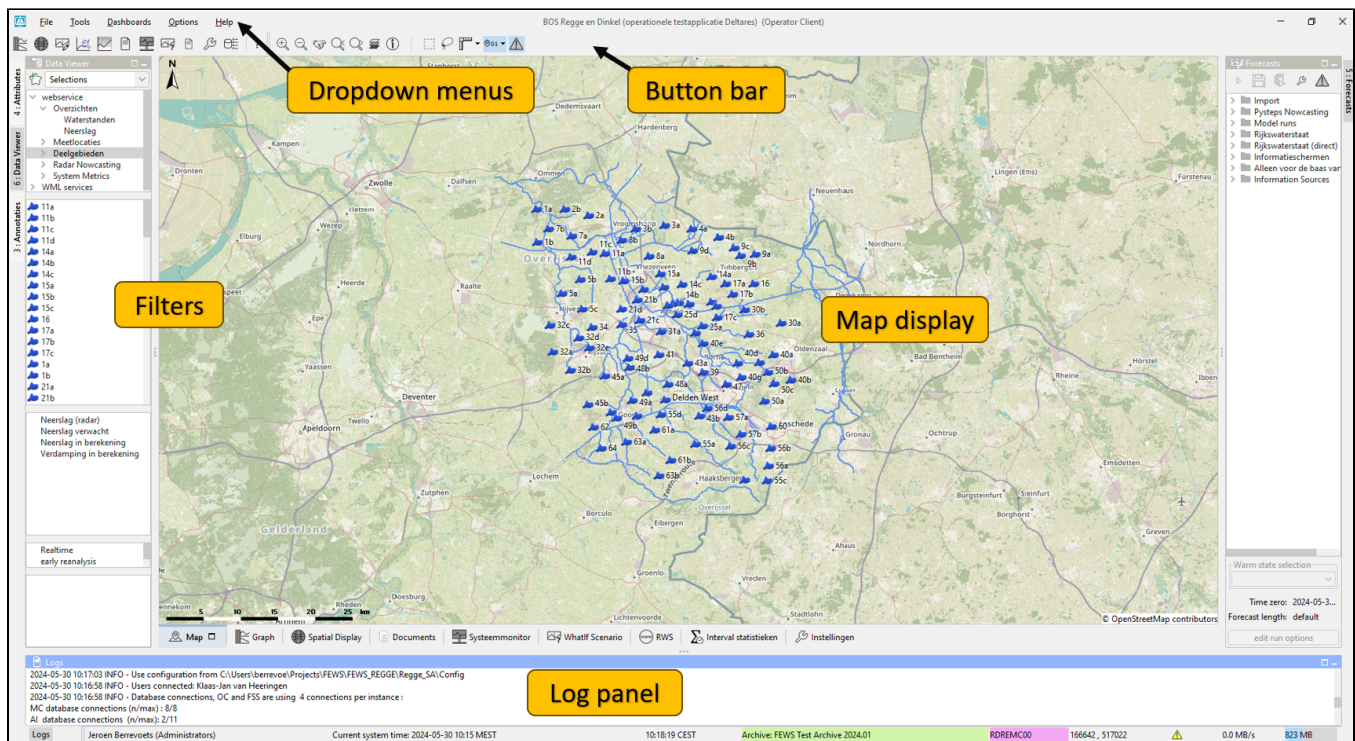
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FEWS Explorer

Overview

FEWS Explorer is the main interface of Delft-FEWS. The key components of FEWS Explorer are emphasized in the figure below. All windows can be manually resized by dragging the mouse, or they can be detached from the main screen. For more information, see the section on Dockable Windows in: [2 3 Interactive Forecasting Displays#23InteractiveForecastingDisplays-Dockablewindows](#).



Map displays

The map display serves two main functions. The first is to provide an overview of the available locations based on a combination of applied filters, and to allow the user to select or deselect locations by clicking on the location icon. The second function is to provide a geographical context for the locations involved in the flood forecast.

Filters

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

1. Time Series Groups
2. Locations
3. Data Types (Parameters)
4. Forecasts

Drop down menus

The drop-down menu bar provides access to all displays that are configured for your specific setup of FEWS.

File - Reload configuration (F5)

This menu option allows for the reloading of the configuration. This means that changes to the configuration can be tested without the need to exit and restart the FEWS Explorer. It's a convenient feature for making adjustments and immediately seeing their effects.

File - Export timeseries

This menu option opens the "Export Time Series" dialog.

This dialog box can be used to filter the selected time series based on view period, module instance, reliability, and status. Once the filter options are selected, the time series that match the given criteria are saved to a file.

When the user selects “unreliable” in the Export Time Series dialog, only export formats that write quality flags are available. These include PI XML files, CSV files with quality flags, and Dutch CSV files with quality flags.

If “unreliable” is not selected in the Export Time Series dialog, then all export formats are available. This is necessary because if unreliable values were exported without quality flags, it would not be possible to identify which values are unreliable in the exported file. 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 time series.

The available export formats in the Export Time Series dialog are:

1. PI XML
2. GIN XML
3. CSV, Dutch CSV
4. CSV with Quality Flags
5. Dutch CSV with Quality Flags
6. iBever CSV
7. Hymos Transfer DB 4.50 MDB
8. Hymos Transfer DB 4.03 MDB
9. Menyanthes CSV
10. UM Aquo 2009 XML

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 feature provides a simple option to temporarily import files in PI XML, NetCDF, or CSV format. This allows you to inspect files without first having to configure a specific import and display.

1D time series (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 the 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, the NETCDF-CF_TIMESERIES import type is assumed, and for 2D grid data, the NETCDF-CF_GRID import type is used.

For the import of CSV format, some configuration is required. 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.

```

</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 utilized. This means it might be possible to copy the table definition from an existing CSV import configuration. Multiple table definitions can be configured, each with a unique name. After this, the user will be prompted to select a table definition to use for the import.

Button bar

The button bar offers quick access to frequently used tools. These tools are plug-ins to the FEWS Explorer. See FEWSExplorer-StatusBar for more information.

Log Panel

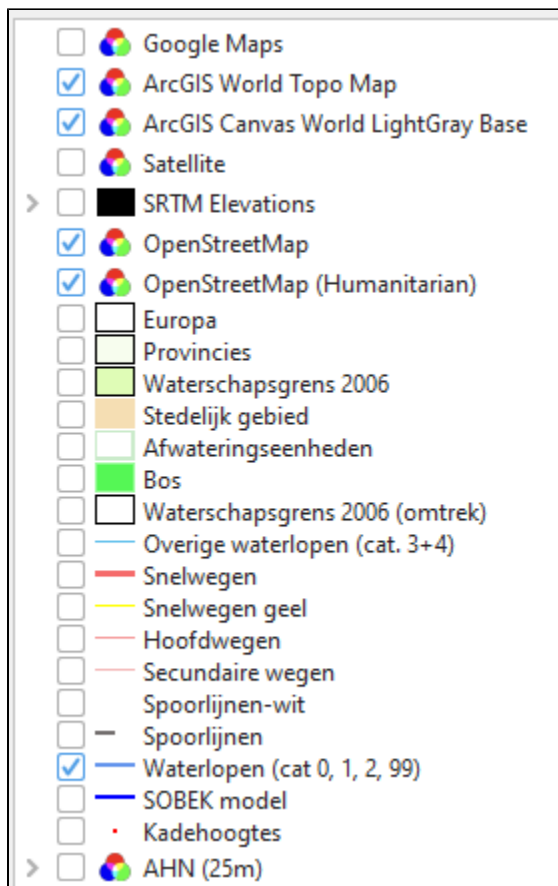
The Log Viewer provides high-level messages generated by active system components. For more detailed messages, users can refer to the Log Browser.

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 main filter that is selected determines which locations will be shown. The background map can be configured to consist of a stacked layering of various maps. For each map, details about line types and fill colors can be set. Map layers can be disabled using the "Layers" button on the Button Bar.



Tooltip

Information is displayed when the user moves the mouse cursor over a shape. To view this information, activate the 'I' button on 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

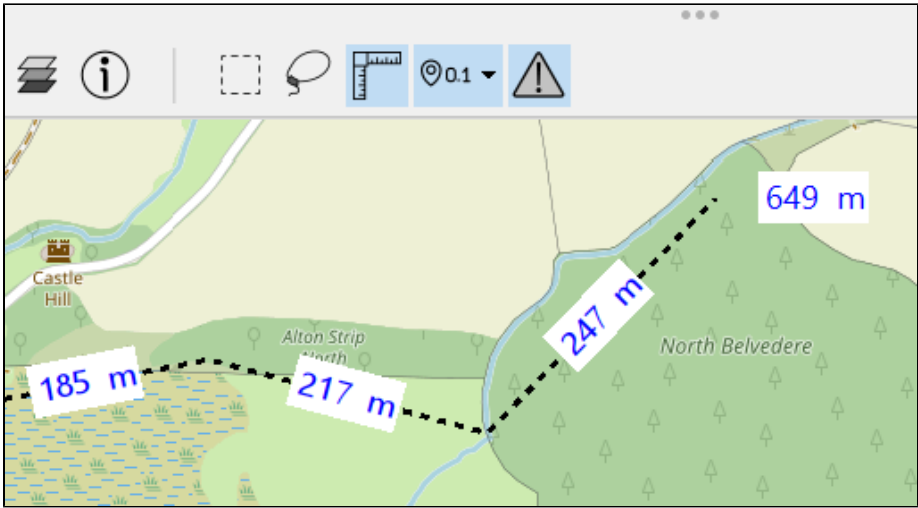
you can zoom out. Panning is possible after having clicked the hand button. After selecting the '🔍' button, drawing a box from top left to bottom right zooms in, while bottom right to top left zooms out. Holding down the right mouse button allows you to pan. The buttons for zoom out and pan remain for 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 performed using the scroll wheel on the mouse, if available. Zooming in and out is achieved by turning the scroll wheel away from or towards the user, respectively. The position of the cursor determines the center 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 respective icons. When a location is selected this way, the locations selected in the Filters (located to the left of the map display) will be adjusted to match the map display. Conversely, if a location is selected in the Filters, the selection in the Map View will be adjusted accordingly. Multiple locations can be selected by holding down the [CTRL] key while making selections.

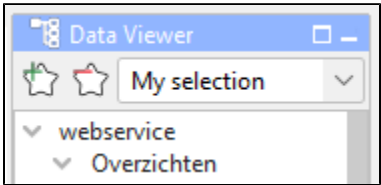
Parameters can be selected in the filter box located below the locations filters. It's also possible to select multiple parameters by holding down the [CTRL] key while selecting.



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

Icon	Description
	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: It allows you to create a freehand selection in the Map Display. To do this, press and hold the left mouse button and drag it around the locations you want to select. Release the mouse button to finalize the selection.

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



Icon	Description
	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 an item from this list is selected, the filters, locations, and parameters contained in that item will be chosen in the Map Display and Data Viewer. Selections can be added or removed using the 'Add /Remove location selection' buttons

The stored selections persist through a restart of FEWS and can only be deleted by manually removing them or when overwritten. These selections are saved in the user settings and will not be visible to other users. The toolbar in the Data Viewer can be concealed to save space by right-clicking on one of the trees in the Data Viewer. The right-click menu includes a 'Show Toolbar' option.

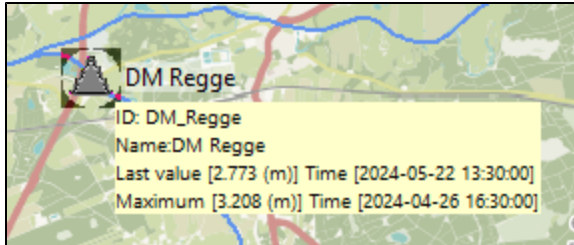
Show map layer information

An icon on the toolbar can be clicked to enable the display of information for map layers as a tooltip. If a map layer is configured to display information from the .dbf file, a user can reveal this information by clicking the information button. If the zoom mode is activated, the desired location will not be selected; instead, the map will be panned. The zoom or pan mode must first be deactivated by clicking the magnifying glass icon again.

When the cursor is moved to a location, a tooltip will be displayed with the following information:

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

An example is provided below:



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

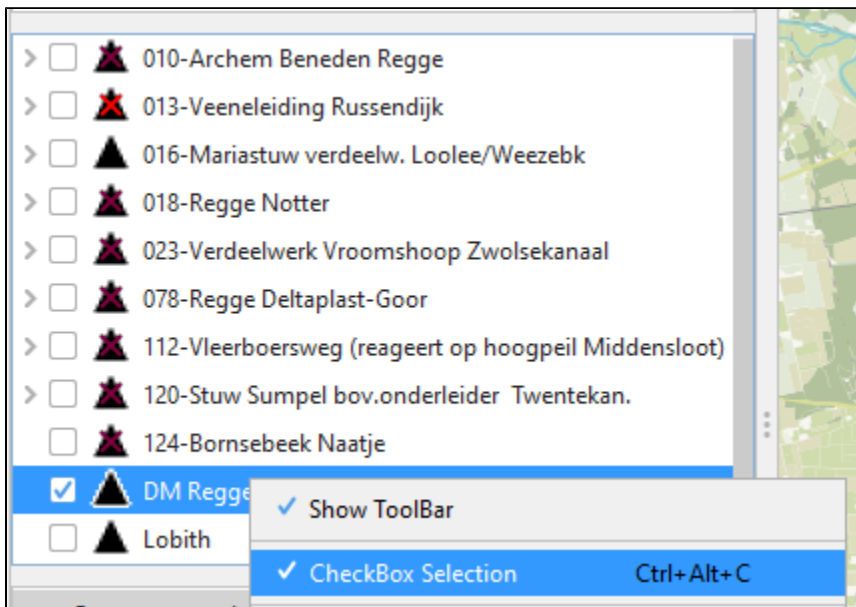
Filters

The filters are the four list boxes located on the left-hand side of the FEWS Explorer. These filters are used to select the data to be displayed in a graph or table. Your selection can be refined by making one or more choices in these list boxes.

Using Check box selection

Locations, parameters, and qualifiers can be selected using checkboxes. To do this, right-click on the windows for which you want the checkbox selection and select 'Show checkbox selection'.

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



Visibility of locations and parameters

The context menu of the list boxes includes the option 'Show only selected' [CTRL ALT O]. This option limits the visibility of locations and parameters in the list box to the elements that are selected when this option is chosen. In the case of locations, the visibility on the map is also limited. The visibility of all elements can be restored using the 'Show All' option [CTRL ALT A]. It should be noted that these options require the list box tree to be rebuilt; in checkbox selection mode, this results in all children collapsing, except for the element with focus (indicated by a dashed box).

Selection of location types

Time series sets can be selected in the upper filter. These sets are configured groups of locations with similar data types. The locations associated 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 multiple locations from a list, hold down the [SHIFT] key between the first and second selection. Hold down the [CTRL] key to individually select multiple location types.

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

- **Select All [CTRL A]:** Selects all locations.
- **Expand Selection [CTRL Numpad +]:** A popup is displayed 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., and also 'Maas km 100.00', 'Maas km 101.00', etc.
- **Shrink Selection [CTRL Numpad -]:** A popup is displayed where the selected locations can be shrunk using a wildcard search (using '*' and '?'). All matching locations will be deselected

Locations list box

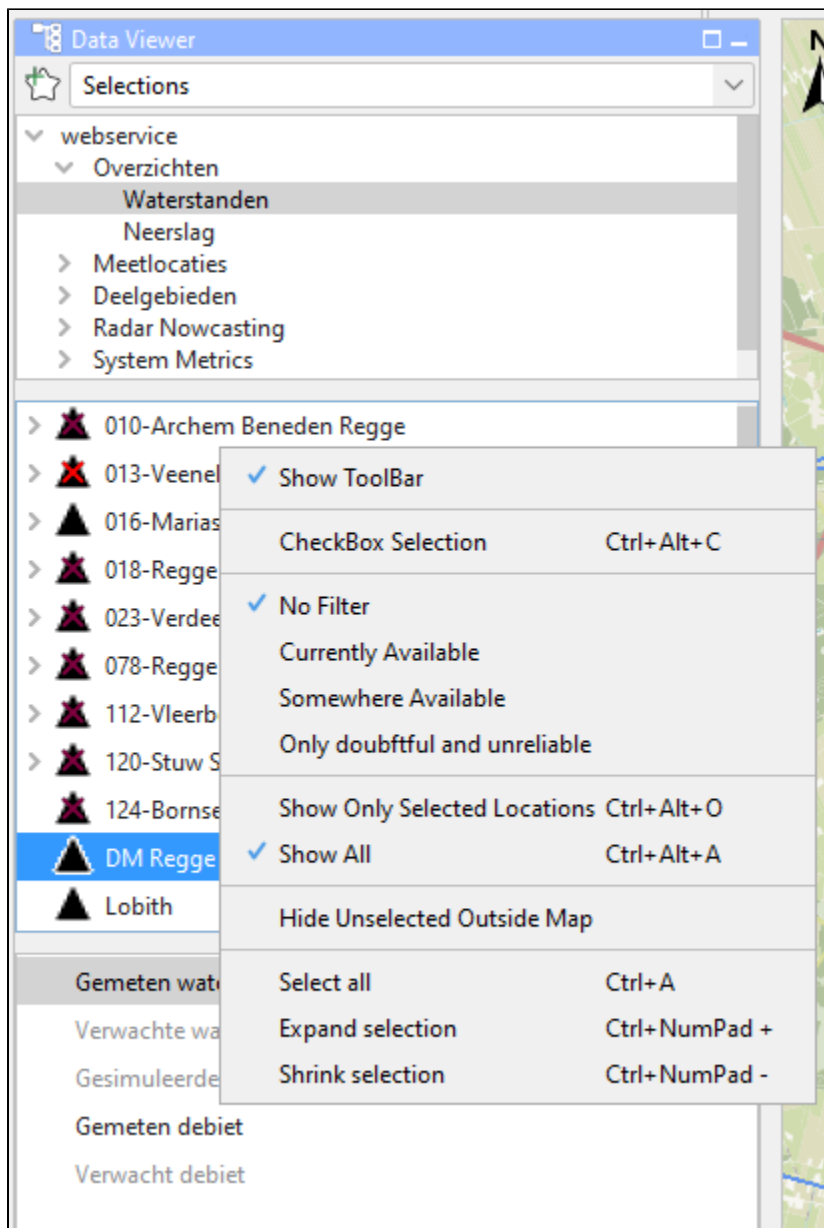
The locations associated with the selected main filter(s) are displayed in the locations filter. Selected locations are highlighted on the map with a blue square. You can also select locations directly on the map.

Location-related icons appear both on the map and next to the location names, providing information about data availability and hydrological status. More details about these icons are provided in a separate section.

The location list box has a context menu, which includes options such as "Hide Unselected Outside Map". When this option is checked, the list updates as you pan or zoom the map.

You can filter locations based on data availability. For example:

- "Currently available" shows locations with data within the configured view period of the filter.
- "Somewhere available" shows locations with data either within or outside the configured view period of the filter.
- "Only doubtful and unreliable" shows locations with unreliable or doubtful data within the configured view period, useful for manual validation.



Data types list box

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

Selecting one or multiple data types updates the location list box, indicating potential data availability with an icon next to each location. If no data is available for a particular location or parameter based on the selections, its name is greyed out.

To select multiple data types, hold down the [SHIFT] key between the first and second selection, or hold down the [CTRL] key to select multiple data types individually.

Using the right mouse button or a shortcut key, the following 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 +]: Open a popup to expand the selected data types using a wildcard search (e.g., * and ?). All matching data types will be selected.
- **Shrink selection** [CTRL Numpad -]: Open a popup to shrink the selected data types using a wildcard search (e.g., * and ?). All matching data types will be deselected.

Forecast list box

The forecast list box displays forecasts selected for viewing via the Forecast Manager. Highlight one or more forecasts in this filter to display them in graphs and tables.

Although not visible in the forecast list, the current forecast is always selected by the system. Icons related to the current forecast appear on the map, and it is always shown in the time series display. Details on selecting the current forecast are provided in the Forecast Manager section.

To remove the selection of forecasts in the forecast list box, right-click within the box to bring up a pop-up menu. Select 'Remove all' to clear the list. This action only removes the selection, not the actual forecasts from the database.

Location related icons








Location-related icons can refer to the following types of information:

1. **Location type icons**
2. **Data availability icons (validation information)**
3. **Hydrological status icons (threshold information)**

Location type






For different types of locations, various icons can be configured for easier identification. Note that only one location type icon can be defined per location. If a location has multiple data types related to different icons, a choice must be made for which icon will be displayed.

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


Icon	Description
	gauged fluvial site
	ungauged fluvial site
	meteorological site
	radar data site
	coastal site
	catchment center point
	default site

Data availability and validation

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

Icon	Description
	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 generally accurate, some common assumptions about them are not always correct. Here are a few examples with explanations:

- **"If a timeSeries contains only missing values (also when looking outside of the view period), it will have a purple cross."**
 - This is often incorrect because missing values might not be stored in the database but are instead deduced (e.g., for equidistant time steps). However, missing values resulting from manual adjustments are stored in the database.
- **"If a timeSeries has a red cross, there are some values available, just not in this view period."**
 - The reason a red cross is not a purple cross is because data are stored in the database for the timeSeries. Besides values, other data such as expired forecasts are also stored, which can result in a red cross. These examples show that this assumption is not entirely 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 for which the data availability icon is shown. This view period configured for a filter does not have to match the view period for the timeSeries displayed in the timeSeries Dialog. If the view periods are the same, then the assumption holds true; otherwise, it does not.

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 [F filters](#) file to display the additional validation icons.

Hydrological and meteorological status

In case the high flow thresholds or rainfall thresholds are exceeded within the configured view period, the following icon is displayed:






Icon	Description
	a threshold exceeded in view period

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


These icons provide information on the map about:

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

There are five additional icons pre-configured for five threshold levels, which are merged with the original threshold icon. These extra icons are:

Icon	Description
	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

One can toggle the threshold icons using a specific button. When this button is activated, the threshold icons are displayed on the map as usual. When the button is deactivated, the threshold icons are hidden, allowing the location type and data availability and validation icons to become visible. This button can

be recognized by its icon: .

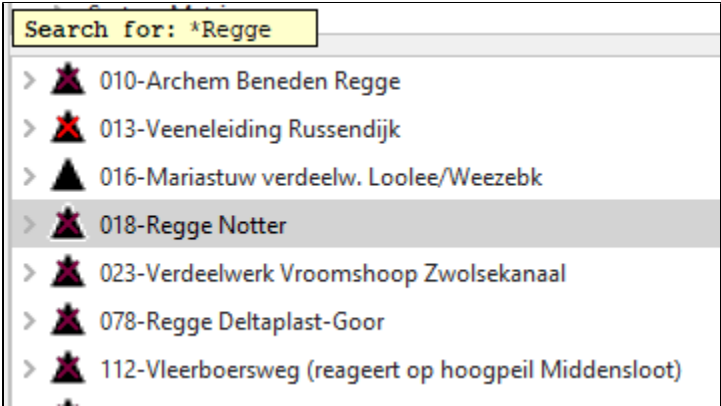
Search in list boxes

It is possible to search elements in the list boxes. Select the appropriate list box and start typing the search criteria. The cursor will jump to the next element that starts with the letters you typed, with an implied closing asterisk ""*".

You can also use the asterisk ""*"" explicitly in the search criteria if you do not want to start with the first character of the elements in the list box. If the search criteria turn red, it means that no matching element can be found.

Examples:

- Typing "ca" will jump to the first element starting with "ca".
- Typing "*house" will find elements containing "house" anywhere in their name.



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

Log Viewer

The Log Viewer provides information about the status of tasks run by the system. The messages displayed by the Log Viewer, called System Messages, are intended for both end users and system managers. These messages typically include logs related to the successful start and finish of a module run.

The following types 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

For each message, the Log Viewer provides the following information:

- Log level (refer to the table above)
- Time of creation
- Event code
- Log message

Further sorting and assessment of the messages can be done with the help of the System Monitor (refer to System Monitor for more details).

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

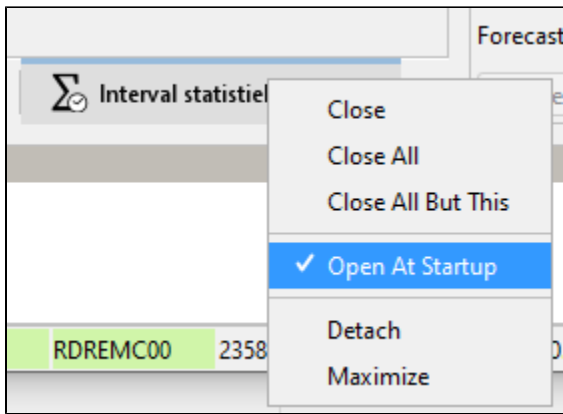
All messages listed in the Log Viewer can be removed from the display (but not from the Local Data store) by right-clicking with the cursor placed in the Log Viewer panel. Two options are available:

- "Clear Messages": Removes all messages from the panel.
- "Save As": Allows you to save the messages in the Log Panel to a file.

Tabs

The "Open At Startup" menu item is available to users, allowing them to specify whether a tab should open automatically when the application starts. If the tab is already configured to open at startup through explorer configuration, this menu item will not be available.

In addition, the last selected panel in a schematic status display is now saved in the user settings.



Status Bar

The Status Bar provides users with real-time updates on the forecasting system's status. Users can customize the information displayed via the Options menu. Some default information always visible includes:

Operator name (always displayed)

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

Current system time

The current system time represents the live operational time of the system, progressing in cardinal time steps. Typically, in live operation, the system time aligns with the current real-world time. However, for analytical purposes, users can manipulate the system time in a standalone environment to simulate past scenarios.

When the system time is adjusted backward, only information with timestamps preceding the set system time is accessible to the system. For instance, if the system time is set to 13:00 on January 21, 2024, any observed data or external forecasts imported before this timestamp are utilized in the analysis. Any data received after this timestamp, even if it fills gaps in the historical record, is not considered for analysis.

Conversely, when conducting analyses without adjusting the system time, all available data up to the current system time is utilized. This includes any data received after the simulated time in the backward-adjusted scenario, providing a more comprehensive dataset for analysis.

Current system time: 2024-05-23 14:05 MEST

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: Indicates that the application is actively updating icons in the data viewer or map. The background turns purple during this process.

Yellow: Indicates that the application is currently updating icons in the Interactive Forecast Display (IFD) or Forecast tree.

Terracotta: Indicates that the system time within the application has been 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 the current operating mode of the system: online or stand-alone.

In the live system, the following color codes indicate the state of synchronization:

- Red: Indicates that the OC is logged off.
- Soft purple: Indicates that the OC is synchronizing with the MC displayed in the system status box.




- Soft green: Indicates that the OC is logged on and fully synchronized with the MC displayed in the system status box.
- Tomato: Indicates that the OC is running the Rolling Barrel (system maintenance) to remove expired data from the local data store.
- Orange: Indicates that the MC, to which the OC is logged in, is in failover mode, either manually or because the FSS are down.

Mouse coordinates

Mouse coordinates displayed in the configured coordinate system

System status icon (always displayed)

The System status icon, located in the lower right corner of the display, indicates whether the system is operating normally or encountering severe errors. The icon has the following display modes:

Icon	Color	Description
	Green	System is running normally but warnings have been encountered.
	Yellow	The system has encountered severe errors in the past 48 hours. This indicates that at least one system message with log level ERROR has been generated. Once all messages with this log level have been acknowledged by the user via the System Monitor, the icon will turn green again.
	Red	The system has encountered fatal errors in the past 48 hours. This indicates that at least one system message with log level FATAL has been generated. Once all messages with this log level have been acknowledged by the user via the System Monitor, the icon will turn green again.

Notification (default disabled)

The Explorer can be configured to display a popup notification upon completion of manually dispatched tasks. This notification appears in the lower left corner of the screen, indicating the name of the dispatched job and whether it was successful or unsuccessful.