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Delft-FEWS Stable Release 2024.01

Release Notes

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Summary

This document contains the release notes for Delft-FEWS Stable Release 2024.01

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Contents

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1 Introduction

1.1 General

This document is the overall Release Notes Document for the Delft-FEWS version 2024.01 which was released **28st of June 2024**.

This release contains around **105 new features** (paid by implementation projects, clients with a support contract, internal funding etc) for the Delft-FEWS components: Operator Client, Forecasting Shell Server, Master Controller, Central database, Admin Interface as well as the Delft-FEWS webservices and the Open Archive.

1.2 Set-up of this document

Compared to previous versions of this (type of) document, the changes started in the 2022.01 Release Notes document are continued. Separate chapters are available for: the Delft-FEWS Vision 2025/Roadmap (2024), Security aspects and Documentation.

Like in previous documents describing the new Delft-FEWS version, underlined references (with working links) to (new) WIKI pages have been included, like the installation page and upgrade page for this software version. Also, the hardware and software requirements page has been updated for this version.

From now on, all new features are being published online (per version) on the Release Notes page. Please visit this page to select the version of your choice. Be aware that some features might get backported to previous versions and will be visible later on in these overviews as well. These online release notes are generated once a day.

The complete overview of fixed bugs are available as PDF (download).

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2 Delft-FEWS 2024.01 : Highlights of the new features and solved bugs

2.1 New features

The following new features are the important highlights of this release (ordered by component). All new features can be found here. New features for the server side, web services and open archive can be found in chapters 5 - 8

| JIRA reference	Component	Description - Explanation
FEWS-28969	Tabular Config Files	Metadata Manager Display
FEWS-28205	Spatial Display	Smooth contourlines for irregular grids
FEWS-28965 - FEWS-28968	Admin Interface	Import / Export status page
FEWS-29912	Admin Interface	Data download enabled
FEWS-30943	Archive Display	Performance improvements seamless integration for all data types
FEWS-30939	Archive Display	Immediate harvester after additions, changes & deletions
FEWS-26522	FEWS web services	Webservice patchable
FEWS-30022	Security	OpenID connect implemented for all components
FEWS-30211	Security	Azure key vault integration for client secrets

2.2 Solved Bugs

This selection of bugs is constructed based on an analysis of the commit and comment activities in our issue tracking system (in JIRA). The main selection criterium is the impact of the solved bug. This is translated into issues with 20+ commits and a resolution time of more than 3 weeks (by looking at the commit dates).

JIRA reference	Component	Description - Explanation
FEWS-30727	DB Init tool	DB Init tool requires MCids to be sequential and start at 0
FEWS-28635	MC Tools	MC tools also removes active configurations where only inactive configurations need to be deleted.

A complete list of solved bugs at time - of the release date – can be found here.

2.3 Always recommended: Configuration check using <F12>

To assess if 'old' (outdated) or deprecated configuration is still applied in your configuration, it is strongly recommended to run the <F12> option under T + *Log obsolete modules and explorer plugins.* The log panel contains the findings of this analysis. Please have a look at this wiki page contains more explanation and details.
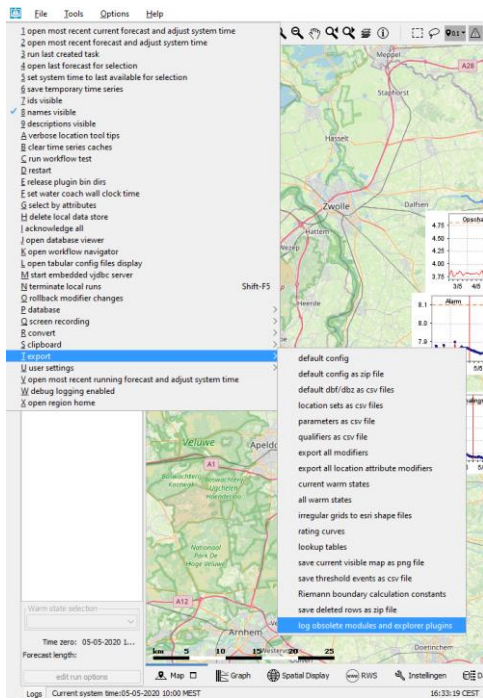
3 Delft-FEWS Vision 2025 – Roadmap 2024

3.1 Introduction

This Delft-FEWS version contains several features that have been implemented as part of *Roadmap 2024* of Delft-FEWS Vision 2025. This vision is working with yearly roadmaps in which Delft-FEWS product management would like to include general improvements to the software and to its software development process which are of benefit to all our users. More information on the Delft-FEWS Vision 2025 and the yearly roadmaps can be found on the Delft-FEWS Community Portal.

This year's focus is presented in the figure below. The rows indicate the roadmap themes and the three columns represent the three main pilars for the Delft-FEWS 2025 Vision:

Theme	Global Community of Practice	Applied Research	High quality open software	Budget (k€)
Code clean up			•	25
Release process and test automation			•	25
Cloud developments	•		•	35
What-if scenarios		•		20
Python interaction		•		
Web operator client	•		•	70
Open Archive		•	•	45
Consistent configuration	•		•	15
Delft-FEWS vision 2030	•	•	•	45
Total	**4**	**4**	**7**	**280**

3.2 Roadmap plans in more detail

The highlights of the roadmap plans can be found here.

Theme*	Examples or main activities
Code clean up	Keep up pace with code refactoring based on thorough migration plans
Release process / test automation	Per release, automate laborious tests. Example Pilot Explorer
Cloud developments	Keep up-to-date with Azure, explore AWS services and expand to Docker/Kubernetes
What-if scenarios	Adjacent to projects complete and mature the what-if scenarios
Python interaction	Skipped in 2024
Web operator client	Adjacent to projects, contribute to new developments, robust testing and product organisation
Open Archive	Redesign and implement internal storage solution/architecture enabling openness and data science
Consistent configuration	Explore possibilities and tools enabling Deltares employees, consultants and end-users learning, understanding and applying most recent configurations and benefit from each other
Delft-FEWS vision 2030	Generating, collecting and managing input for the new product vision

3.2.1 Third party library upgrades

JIRA reference	Remark	Upgraded from	Upgraded to

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FEWS-27692	zlib.dll (netCDF) upgrade	1.2.12	1.3.1
FEWS-28836	MongoDB - archive-database-1.2.jar upgrade	1.2	-
FEWS-26908	Upgrade postgresql driver	42.6.0	42.7.3

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4 Delft-FEWS 2024.01 : Security aspects

4.1 Introduction

The security aspects will be described in a more prominent place in the Release Notes document from now on.

In the first half of 2024, no major 'zero-day' vulnerabilities occurred.

Based on earlier occurrences (e.g. log4J, Spring4Shell) Delft-FEWS Product Management implemented a more pro-active approach by:
- Having a Delft-FEWS security matrix and description in place (see Roadmap theme, see previous chapter)
- Daily OWASP checks on the *build* environments on all supported branches
- Reporting on third partly library vulnerability assessments
- Maintaining an Upgrade and Update strategy

4.2 Daily OWASP checks, assessments and communication

On the TeamCity build & compile environments daily OWASP checks have been implemented for the Delft-FEWS branches from current trunk back to 2021.02.

Outcomes will be discussed in the daily stand-up meetings and will result in actions and communications according to our procedures.

On a dedicated CVE issues page on our Delft-FEWS WIKI detected vulnerabilities, our analysis and status are reported.

4.3 Upgrade and update strategy

Delft-FEWS PM maintains a password protected page for detailing out the Delft-FEWS upgrade/update strategy - per release - with respect to:
- Supported versions of (central) databases: Oracle, PostgreSQL and SQLServer;
- Supported versions of operating systems (linux, Windows);
- Java JDK;
- Important middleware: Tomcat, OpenSearch, Thredds, JCEF;
- Important third party libraries (e.g. log4j);

On request Delft-FEWS PM can share this with end-users/organizations having a Support & Maintenance agreement in place. Please contact fews.support@deltares.nl.

4.4 Security Documents

Different security documents are available:
1. Security Matrix and Description
2. Admin Manuals
3. Connectivity Guide

See the table below for more information.

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	Security Matrix + Description	Admin Manuals	Connectivity Guide
Location	Delft-FEWS PM one drive	Admin Manuals	Connectivity Guide
Available	Deltares (-USA) Clients (on request + discussion)	WIKI (login required)	WIKI (login required)
Status	Available	Available for: 2018.02 – 2024.01	Available for: 2018.02 – 2024.01
Topic / focus	**What** security aspects are relevant for Delft-FEWS systems? And **where** to solve them.	Recommended deployment steps + explanation on **how** to install in a secure way	Even **more technical details on the how** to install the Delft-FEWS components secure.
2024 update	As is.	As is.	As is.

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5   Delft-FEWS 2024.01 Client-Server System

5.1   Introduction

An installation of the 2024.01 version or an upgrade to 2024.01 follows – in general - the new and simplified installation or upgrade steps described on the Delft-FEWS WIKI. Both procedures have a large overlap in terms of number/types of steps.

We strongly recommend following the special upgrade path pages (from a certain version to the next version). An overview can be found here: Upgrade paths – overview.

For the specific upgrade from 2023.02 to 2024.01 you can directly go here.

On the renewed Delft-FEWS Upgrade page you also find information (per version) about:
- What's new in the Installation process (general) and for 2024.01 in particular
- Database release notes for Database Administrators

Other relevant documentation (per version) can be found on the WIKI as well:
- Admin Manuals - 2024.01 version
- Connectivity Guides – 2024.01 version

On request, Linux RPMs can be provided. Some instructions may be required (by Deltares ICT). For this version, for Windows, we are in the process of supporting installing Delft-FEWS components using PowerShell scripts. This is beta-functionality at this moment. Please contact us for more information on this topic (e-mail, see below). Rationale for this shift to PowerShell scripts is the EoL policy of MSI support by Microsoft.

RPMs are available for:

- Delft-FEWS Master Controller / FSS binaries (including launcher services). This RPM can also be used for installing the OC (remark: services can be left *disabled*)
- Tomcat10
- Delft-FEWS Admin Interface
- Delft-FEWS HTTPS Proxy
- Delft-FEWS Web services
- Delft-FEWS Open Archive

If you are interested in using RPMs (or PowerShell scripts), please contact fews.support@deltares.nl or fews-pm@deltares.nl

5.2   Relevant new features and aspects

Below most relevant system improvements in this version are mentioned. All new features can be found here.

JIRA references	Delft-FEWS server side component	Description – Explanation
FEWS-28965 - FEWS-28968	Admin Interface	Import/Export status page (AI)
FEWS-29912	Admin Interface	Download data
FEWS-29465	Forecasting Shell Server	FSS Scaling enabled

FEWS-30475	MC Tools	MCTools enabling updates

The used JRE version for the backend is**:** 17.0.9 (Amazon Coretto 17 TLS).

Based on this (extracted) JRE package of 300 Mb, an optimized subset is being created for both Linux and Windows Operating Systems (OS).

During compiling the Delft-FEWS binaries, this results in 62 Mb (unzipped) JRE folder for Linux and a 50 Mb JRE folder for Windows as part of the binaries. After uploading these binaries via the Admin Interface, only the relevant OS-specific binaries and JRE folders are downloaded to the components (FSS, OCs) of the Delft-FEWS client-server system. This optimization is implemented to avoid unnecessary downloads since there's no need for Linux SO files on Windows systems or Windows dll's on Linux servers.

More details on the hardware and software requirements for this version can be found here.

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6 Delft-FEWS 2024.01 : Web services (API)

6.1 Introduction

The Delft-FEWS Web Services provide different webservice API's to exchange data with Delft-FEWS. Most commonly used variants are:

- FEWS PI REST Web Service
- FEWS WMS Web Service
- FEWS SSD Web Service
- WaterML2 Web Service
- FEWS WFS Web service

The installation of the Delft-FEWS web services can be found here.

Other hardware and software requirements for this version of the Delft-FEWS webservices can be found here.

Since 2021.02 The documentation about the Delft-FEWS web services is (also) provided in Open API specification format here.

6.2 Relevant new features and aspects

Most relevant new features which have been implemented for the Delft-FEWS Web Services are listed below

JIRA references	Delft-FEWS Web Service	Description – Explanation
FEWS-30495	WaterML2 web service	WaterML web service improved (quality flags)
FEWS 26522	FEWS web services	FEWS webservices made patchable
FEWS-30349	WMS web service	Enabled pre-caching
FEWS-29774	PI Rest web service	Get CSV response for action requests

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7 Delft-FEWS 2024.01 : Open Archive

7.1 Introduction

The Delft-FEWS Open Archive is the (optional) long term storage solution next to a Delft-FEWS Client-Server system. It consists of the following components:
- Delft-FEWS Archive Server;
- Delft-FEWS Archive Admin GUI;
- Harvester based on OpenSearch
- Delft-FEWS Archive Display;
- Delft-FEWS Archive Export and Import workflows;

And the data can be in one or more of the below mentioned storages:
- Delft-FEWS Open Archive file system;
- External NetCDF Storage;
- MongoDB database storage;

The landing page, installation and upgrade pages can be found by clicking the links.

The hardware and software requirements for the Open Archive can be found here.

7.2 Relevant new features and aspects

Most relevant new features which have been implemented in this version are listed below.

JIRA references	Archive Component	Description – Explanation
FEWS-30943	seamless integration	Performance improvements seamless integration all data types
FEWS-30939	harvester	Immediate harvester after additions, changes & deletions
FEWS-29568	seamless integration	Retrieving external forecast data and model states from the archive in running workflows

7.3 Product Vision and Roadmap for the new Archive

End of 2023, a product vision document for the Open Archive was developed and delivered. This has been considered as an internal document with recommendations which have been translated to:
1. Short term developments with respect to
   a. Performance improvements (incl. harvester) for 2024.01 and 2024.02
   b. Easier installation and upgrades
   c. Improving the robustness and reducing the impact of downtimes and errors in the open archive on the connected forecasting system
2. Long/mid term developments
   a. (Potential) redesign of internal storage to enable data science.

Several improvements in 1a/1b have been implemented into 2024.01 and have been described in this chapter. For the second half of 2024, the other aspects will be implemented or designed.

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8 Delft-FEWS Web Operator Client (Web OC)

8.1 Introduction

The Delft-FEWS Web OC has been part of the Delft-FEWS software suite since the 2023.02 Delft-FEWS release. General documentation regarding Web OC is available at: https://deltares.github.io/fews-web-oc/. Important information on Web OC Release Management can be found at: https://deltares.github.io/fews-web-oc/architecture/#release-management. Below is a summary of the key points.

In contrast to the regular Delft-FEWS bi-annual release cycle, Web OC is developed incrementally. Each approved code change results in a new version of the Web OC software. From that moment, this (and only this) version will be the basis for further development and bug fixing. Support, when reporting a Web OC bug, can be provided by resolving the bug in the current version of the software. In practice, this means that adopting a new Web OC software version often includes bug fixes as well as newly developed functionalities.

The first Delft-FEWS back-end release compatible with Web OC, is the 2023.02 release. With the 2024.01 stable release, both 2023.02 as well as 2024.01 are compatible with Web OC. On the Web OC release page (https://github.com/Deltares/fews-web-oc/releases), it is indicated which version of Web OC software was current at the time of the bi-annual Delft-FEWS back-end release. This page provides this overview as well.

8.2 What´s new in the installation process?

Since the introduction of Web OC, the installation process did not change.

The Delft-FEWS Web OC is distributed as a single page web application. Please refer to: https://deltares.github.io/fews-web-oc/deployments/, for relevant information regarding the installation process.

8.3 Relevant new features and solved bugs

At the release date of Delft-FEWS 2024.01 the current version of Web OC is version 1.1.0. Release notes are available at: https://github.com/Deltares/fews-web-oc/releases/tag/v1.1.0. Developments are categorized by issue type: *New Feature*, *Improvement* and *fixes.* Key features in this release are:

- User adjustable legend ranges
- Display vertical profiles
- Add splashscreen with disclaimer text
- Add animated streamline layer to spatial display
- Support for locationId & plotId in topology nodes
- Frontend information panel WMS layer color scales
- Migrate from mapbox to maplibre
- Do not show components in navigation menu when showinnavigationmenu=false
- Download data from a timeseries chart
- Add uploading of dist to assets of newly created releases
- Data download panel
- Add menu for running secondary workflows
- Support icons for map locations
- Area charts and bar charts

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- Data download: add ability to insert new timeseries table rows
- Show location name as text-field on map
- Allow coordinate marker to be dragged and show its position
- Show scalebar on the map
- Time series chart: use period from display configuration (consistent with Desktop OC) as x-axis domain
- Download timeseries from grid cell selection
- User settings: added switch to turn location names on and off
- Add agree to terms dialog if so configured
- Show WMS maximum values below the time slider
- Allow users to set custom start and endtime for time series chart display
- Use speed exponent from FEWS Configuration (WMS getCapabilities) instead of hard-coded value for animated vectors
- Do not show unreliable flagged data in time series charts
- Add only download metadata checkbox

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9 Documentation

9.1 Introduction

The Delft-FEWS WIKI is (still) growing and evolving and we are trying to keep it as up-to-date as possible. Main start page is here.

9.2 System administrator documentation

Early 2022, we have re-arranged some pages in the (restricted) System Installation Section. In several places we have introduced version specific installation or upgrade pages so that it is absolutely clear what needs to be done while installing or upgrading. This approach is available for:

- Installing Delft-FEWS (and many underlying steps)
- What's new in the installation process?
- Upgrading paths for Delft-FEWS

This approach is also chosen for the Hardware and Software requirements page.

A password protected wiki page is the Delft-FEWS Upgrade Strategy page. This page is meant to provide a detailed insight about which third-party libraries, Operating System versions and Database versions are supported for which Delft-FEWS versions.

9.3 Feature documentation

Most new features mentioned in the appendices have a link to the WIKI where you can find more details about the background, usage and – if applicable – how to configure the features.

Another, publicly accessible (and growing) source of documentation can be found under https://fewsdocs.deltares.nl/

You can find the following here:
- Latest XSD schemas
- Release Notes for 2022.01 and higher
- Granted features future releases
- Delft-FEWS Web service (Open API format)
    - REST web service
    - WMS web service
    - SSD web service
- Admin Interface API
- RPM GPG public key

9.4 Compatibility documentation

A new page has been added to the general Delft-FEWS WIKI describing the compatibility between Delft-FEWS versions and Web OC versions. This page can be found here.

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