

# Release Notes 2025

# MIKE 21

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## Introduction

Welcome to MIKE 21 2025.

In this Release Note you will find information about new features of MIKE 21, and what you need to know in order to install and get started with Release 2025.

MIKE 21 is the world's leading modelling package for 2D free surface flow, waves, sediment transport and environmental processes. It is the true work horse of estuarine and coastal modelling with a wider range of facilities and modules than any similar package.

## System requirements

### Operating systems

|   |   |
|---|---|
| Fully supported Windows operating systems *             | Windows 11 Pro, version 24H2 (64-bit)<br>Windows 11 Pro, version 23H2 (64-bit)<br>Windows 10 Pro, version 22H2 (64-bit)<br>Windows Server 2022 Standard, version 21H2 |
| Non-supported but partially tested operating systems ** | Windows Server 2019 Standard, version 1809  |
| Supported Linux distributions***                        | Red Hat Enterprise Linux (RHEL) 8 and 9 (all 64-bit)<br>Ubuntu 22.04 and 20.04 (all 64-bit)   |

\* Fully supported operating systems are systems that have been tested in accordance with the MIKE Powered by DHI Quality Assurance procedures and where warranty and software maintenance agreement conditions apply.

\*\* Non-supported but partially tested operating systems are systems that have only undergone limited testing and so are not officially supported for running MIKE software products. The MIKE software warranty and software maintenance agreement conditions do not apply for non-supported operating systems. DHI is under no obligation to provide assistance or troubleshooting for cases where the software is being used on a non-supported operating system.

\*\*\* Supported Linux distributions are the Linux distributions used for building and testing MIKE Zero for Linux 2025. Other distributions may or may not work and are not recommended. However, MIKE Zero for Linux has been successfully installed on several other Linux distributions, including Ubuntu Kylin, Galaxy Kylin (V10), AlmaLinux and Debian (all 64-bit).

**Please note** that when running a fully supported operating system as a 'guest operating system' on a virtualization platform, it is automatically downgraded to a non-supported operating system under the conditions provided above.

### Minimum hardware/software requirements

|                       |  |
|-----------------------|--|
| Processor             | compatible with x64 instruction set, 2.2 GHz or higher                       |
| Memory (RAM)          | 4 GB or higher *   |
| Storage               | 64 GB or higher *  |
| Display               | resolution 1024 x 720 (High-Definition) or higher, 24-bit color (true color) |
| Graphics adapter      | 64 MB RAM (256 MB RAM or higher recommended), 32-bit true color **           |
| Software requirements | Microsoft .NET Framework 4.7.2 or higher                                     |

\* The actual required amount of memory and disk space depend on the usage (application, model setup, size of data files etc.)

\*\* MIKE 21 Flow Model FM utilizing GPU requires a Nvidia graphics card with compute capability 6.0 or higher. Please note that some of these graphics' cards have varying performance in single compared to double precision calculations. The GPU functionality is based on version 12.5 of the Nvidia® CUDA® Toolkit.

## Installation

**DHI License Management - If you are installing on a computer or server where you will also install the license file, please also install the DHI License Manager. It must be downloaded separately.**

To install MIKE 21, please go to the MIKE Zero product folder and execute the setup.exe file either on the MIKE 2025 USB or from the downloaded, un-zipped installation files. Press the 'Install' button to begin installation.

The setup program will automatically install all necessary files and folders on your computer. Additionally, an entry is created in the Start Menu for MIKE Zero.

**Important information:** Please be aware that all MIKE software on the same computer must be installed with the same service pack. This is due to the dependencies between MIKE software products and the ability for the software to use the latest features and systems updates.

**Please note** that a separate installation guide, including system requirements, for MIKE Zero for Linux is available [here](#).

## License file and dongle

**Please Note** that when using the local or network license option, which require a license file and a dongle, then

- The DHI License Manager must be installed separately.
- All licensed applications included in MIKE 2025 require a 2025 version of the DHI License Manager.
- A new license file format (file extension dhilic2) has been introduced with MIKE 2022 and these license files can only be used together with a DHI License Manager 2022 or newer.

To use MIKE software in licensed mode, please refer to the [DHI License Manager Release Notes](#).

## Product invocation

Launch 'MIKE Zero' from the Windows Start menu. Then you can select MIKE 21 from within the MIKE Zero Shell.

Starting any MIKE Zero application without a DHI configured hardware key and valid license files will cause the program to run in demo mode. If this happens, a message box will inform you during program initialization. When running in demo mode, the MIKE Zero installation supplies full access to all editors, computational engines and editing facilities. However, restrictions apply to the setups that can be executed as a model simulation.

## Support

For general support, please refer to our [Customer Care Portal](#).

If you experience any difficulties, or if you have questions, please contact our Customer Care team at [mike@dhigroup.com](mailto:mike@dhigroup.com).

You can also contact your local Customer Care team for support in your local language. A list can be accessed from [here](#).

## New features and fixed issues

Every new release of MIKE 21 consists of new modules, new features and/or corrections to problems or significant inconsistencies discovered in previous releases. Please find below short descriptions of the most significant news.

### Release 2025

#### New features and improvements

| Module/type | New feature  |
|-------------|--|
| MIKE FM     | First release of MIKE 21 Wave Model FM (our new Boussinesq-type phase-resolving wave model): <ul style="list-style-type: none"><li>• Finite Volume (FV) scheme with fully unstructured mesh for boundary fitting and local mesh refinement.</li><li>• Improved flooding and drying for overtopping of breakwaters.</li><li>• Includes inundation output for coastal flood mapping.</li><li>• Improved workflows; internal wave generation, setup of porosity and sponge layers, simple switch between 2D and 3D.</li><li>• Standard FM features are available; for example, coastal vegetation and post-processing via Data Extraction FM.</li><li>• OpenMP and MPI parallelisation with official Linux version for HPC systems.</li></ul> See Figure 1. |
| MIKE FM     | The calculation of the QH-relation tables for Culvert structures has been updated to improve alignment with MIKE 1D.   |
| MIKE FM     | Improved sand transport calculations when helical flow is applied. This is due to improved calculation of fluxes from a 2D flow field. This improvement may lead to differences in outputs over Release 2024.  |
| MIKE FM     | Extended option for specifying the wind forcing in the hydrodynamic module. Wind speed, wind direction, and wind speed components can now be specified for all three relevant formats. When wind forcing is specified as a 2D map (time-varying), it is possible to specify if the effect of pressure should be included or not included. See Figure 2.  |

|              |   |
|--------------|---|
| MIKE FM      | Performance of sediment transport rate calculations using sediment transport tables has been improved. In the Sand Transport module, the speedup is approximately a factor of 2, and in the Mud Transport module the speedup is approximately a factor of 3.  |
| MIKE FM      | Possibility to save 2D structured overlays as DFSU output files in all modules (HD, TR, ST, MT, EL and PT) in the MIKE FM modelling system. This feature unlocks the usage of all FM-based tools on gridded datasets.   |
| MIKE FM      | Size of table for Point series locations in the Output specification page has been increased. See <a href="#">Figure 3</a> .  |
| MIKE ECO Lab | <p>First release of MIKE ECO Lab 2.0:</p> <ul style="list-style-type: none"> <li>• MIKE ECO Lab is now available in either "Classic" or "Version 2.0" modes.</li> <li>• MIKE ECO Lab version 2.0 is only supported by the MIKE FM engines.</li> <li>• The settling &amp; buoyancy scheme has been updated to prevent mass balance problems.</li> <li>• Improved (OpenMP) parallelisation.</li> <li>• Updated plugin API.</li> <li>• In future releases, the classic version will only receive important bug fixes. It will be marked as deprecated and may be removed in later releases.</li> <li>• Feature updates and further development will be restricted to MIKE ECO Lab Version 2.0.</li> </ul> <p>See <a href="#">Figure 4</a>.</p> |
| MIKE Zero    | <p>Significant refactoring and improvements in the Data Extraction FM tool:</p> <ul style="list-style-type: none"> <li>• Improved performance using OpenMP parallelization</li> <li>• View button for the input data file</li> <li>• Validation of input data file</li> <li>• Align output file selection with approach used in the MIKE 21/3 input editors</li> <li>• Bathymetry can be shown in the Geographical View</li> <li>• Possibility to save 2D structured overlays as DFSU output files in all modules (HD, TR, ST, MT, EL and PT)</li> </ul>  |
| MIKE Zero    | <p>Two new tools have been added to the Statistics group in the MIKE Zero Toolbox tools</p> <ul style="list-style-type: none"> <li>• DFSU Statistics</li> <li>• DFSU Vertical Statistics</li> </ul> <p>See <a href="#">Figure 5</a>.</p>  |
| MIKE Zero    | The Mesh Manager tool has been extended such that local refinement can now be specified using element area. See <a href="#">Figure 6</a> .  |
| MIKE Zero    | Improved the Graphical Overview tab such that gate control points are now visible in the overview. See <a href="#">Figure 7</a> .   |
| MIKE Zero    | <p>The Properties dialogs for Time Series Plot and Profile Plot have been made resizable (for example, in Data Viewer and Plot Composer). Additionally, the following improvements have been made to the properties tables:</p> <ul style="list-style-type: none"> <li>• Tool tips have been added to show full field information (for example, file name and path).</li> <li>• Double click on header field will resize that column to fit the data.</li> <li>• Double click on index field will resize all columns in the table to fit the data.</li> </ul> <p>See <a href="#">Figure 8</a>.</p>  |
| MIKE Zero    | Data Viewer has been improved to properly handle visualisation of transects.  |
| MIKE Zero    | The Engineering Unit Management (EUM) system has been updated to include water chemistry, carbon emission and pollutant load parameters.  |
| MIKE Zero    | The ability to reproject mesh files from within Data Viewer has been added. See <a href="#">Figure 9</a> .  |

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|   |  |
|---|--|
| MIKE Zero                                 | The ability to save and load polygon selection areas in Data Viewer to easily repeat manual post-processing operations has been added. See Figure 10.  |
| MIKE Zero                                 | The ability to view area of each element selected within a polygon in Data Viewer for improved post-processing operations has been included. See Figure 10.  |
| MIKE Zero                                 | The ability to save and load time series point locations in Data Viewer, and further visual improvements, have been added.   |
| MIKE Zero                                 | Keyword handling for map projections has been improved.  |
| MIKE Zero                                 | Performance of the MIKE Zero Data Utility has been improved.   |
| MIKE Zero                                 | It is now possible to compare two files side-by-side in the Results Viewer using the slider-based 'Split View Compare Files...' function. See Figure 11.   |
| MIKE Zero                                 | Possibility to configure the maximum time passed with no engine progress before the automatic cancellation of a MIKE Cloud simulation.   |
| Future of single precision MIKE FM engine | The single precision MIKE FM engine is planned to be removed from the installation package in the near future. The time for removal will be approximately 12-months from the release date of MIKE 2025 (this release). |

## Fixed issues

| Module/type              | Error/Inconvenience   |
|--------------------------|---|
| MIKE 21 Boussinesq Waves | An error has been corrected in the 1D Boussinesq Wave module in connection with wave breaking.  |
| MIKE FM                  | Fixed error in the calculation of orifice coefficients for culvert structures.  |
| MIKE FM                  | Addressed incorrect handling of spatially varying input (DFS2/U) files with rotated geographical coordinates.                                   |
| MIKE FM                  | In the MIKE 21 Shoreline Morphology module, validation checks on the number of profiles using a DFS2 file have been improved.                   |
| MIKE FM                  | Validation checks for broad-crested weir structures have been improved.   |
| MIKE FM                  | In the GPU version, discharge calculations might be incorrect if the discharge line contains only one face. This has been corrected.            |
| MIKE Zero                | An issue in Data Extraction FM has been rectified where the position of horizontal layers is not correct when extracting from LONG/LAT outputs. |
| MIKE Zero                | In Cloud Explorer and Simulation Launcher, the upload of files from network drives has been fixed.  |

## Figures

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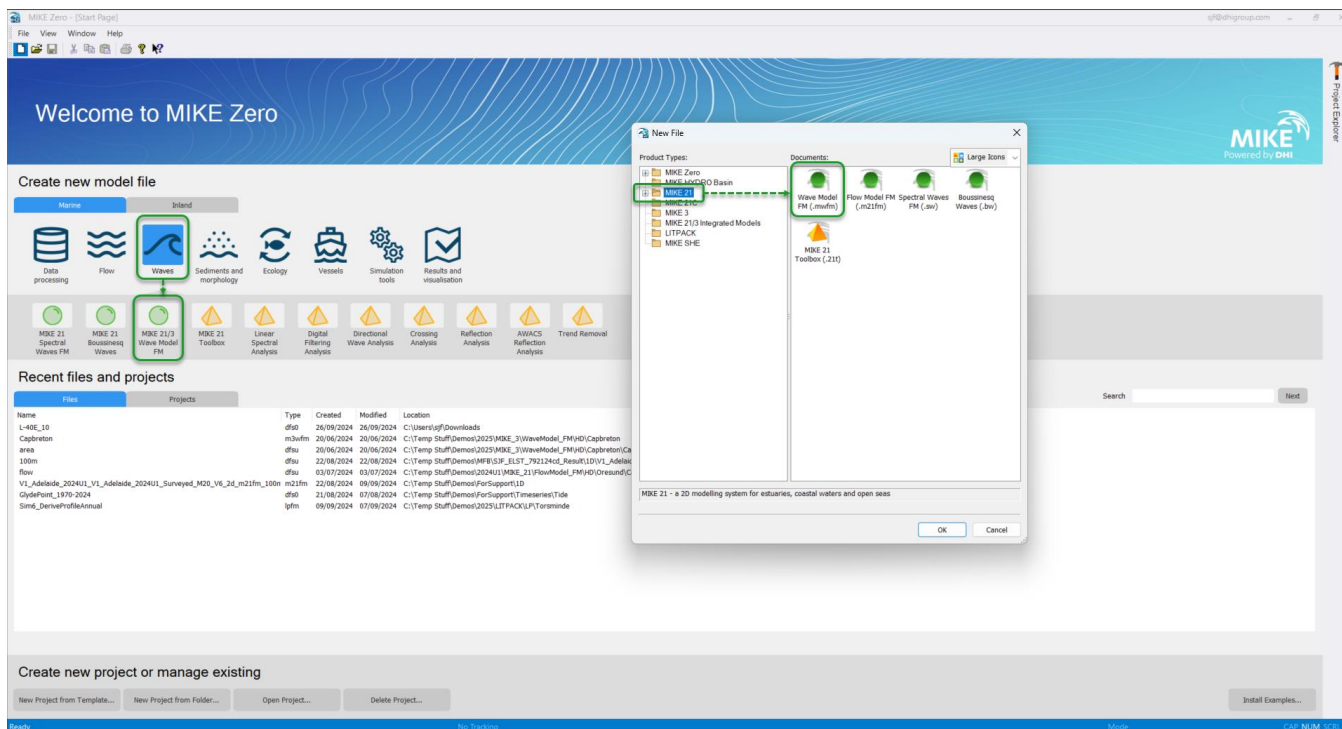


Figure 1 – How to find MIKE 21 Wave Model FM

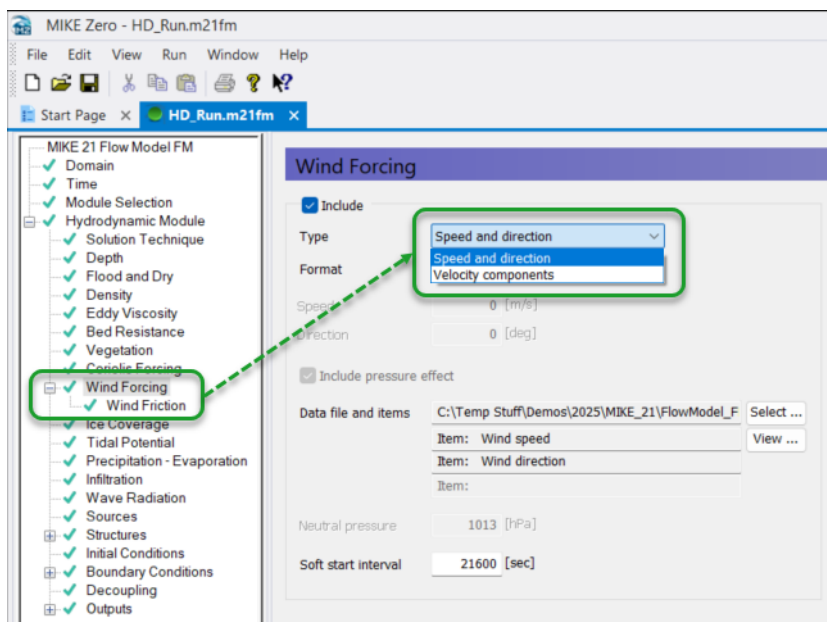


Figure 2 – Extended option for specifying the wind forcing in the hydrodynamic module

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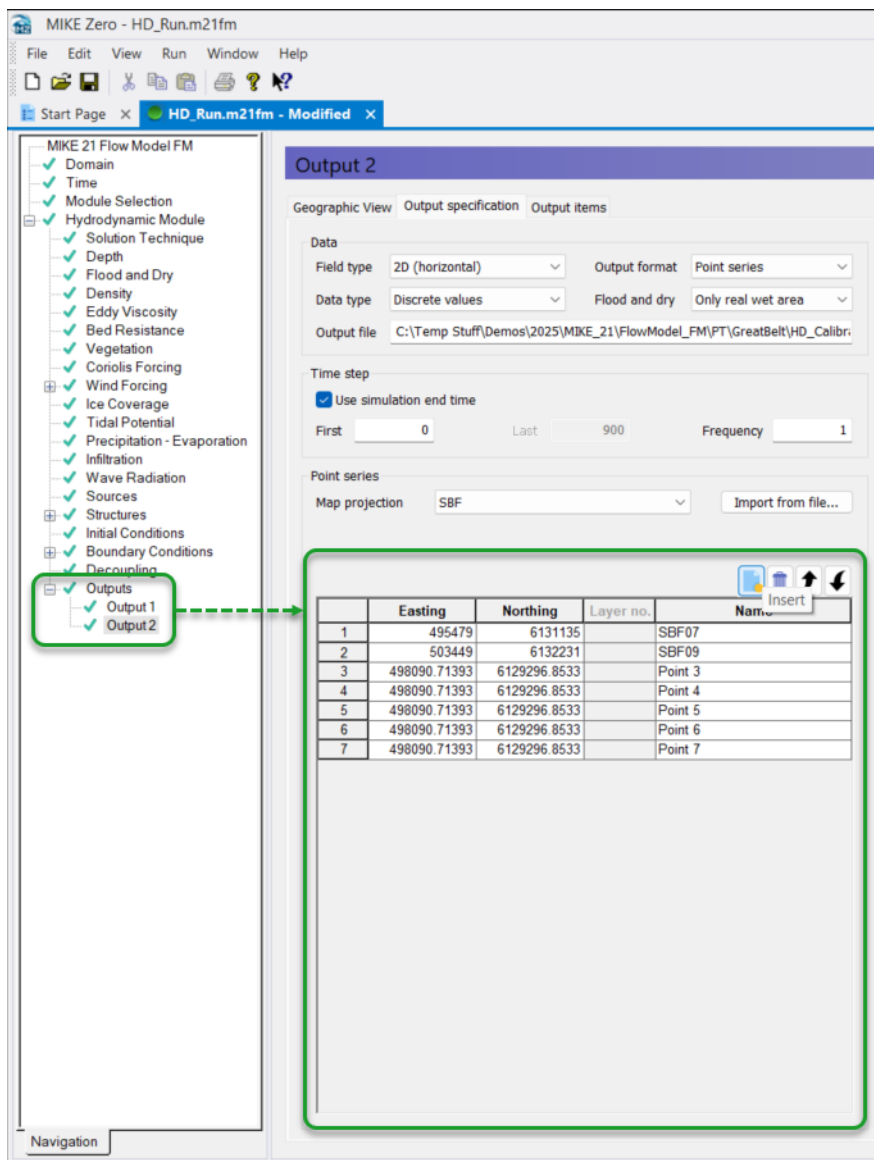


Figure 3 – Size of table for Point series locations in the Output specification page has been increased



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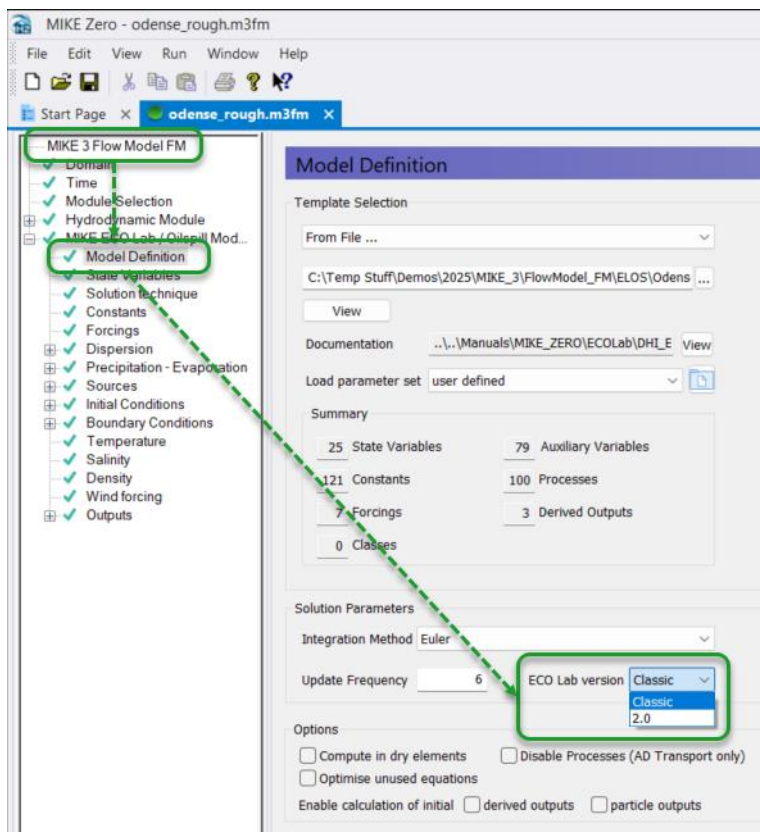


Figure 4 – How to enable MIKE ECO Lab 2.0

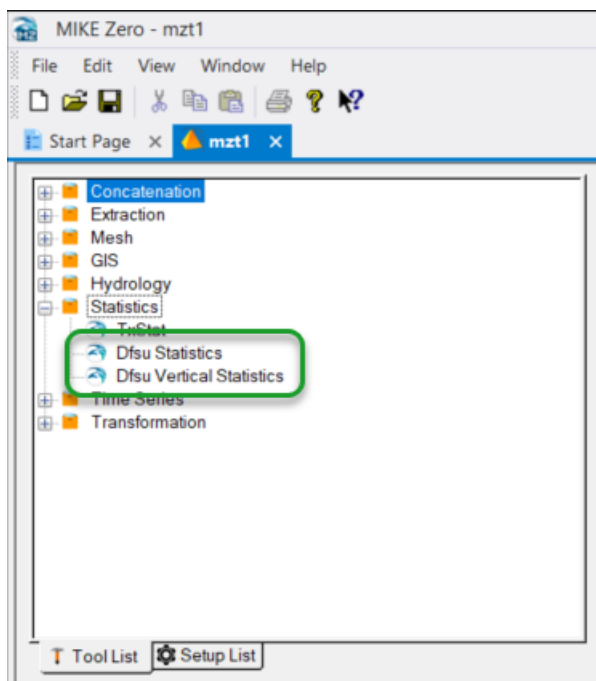


Figure 5 – How to find Dfsu Statistics and Dfsu Vertical Statistics

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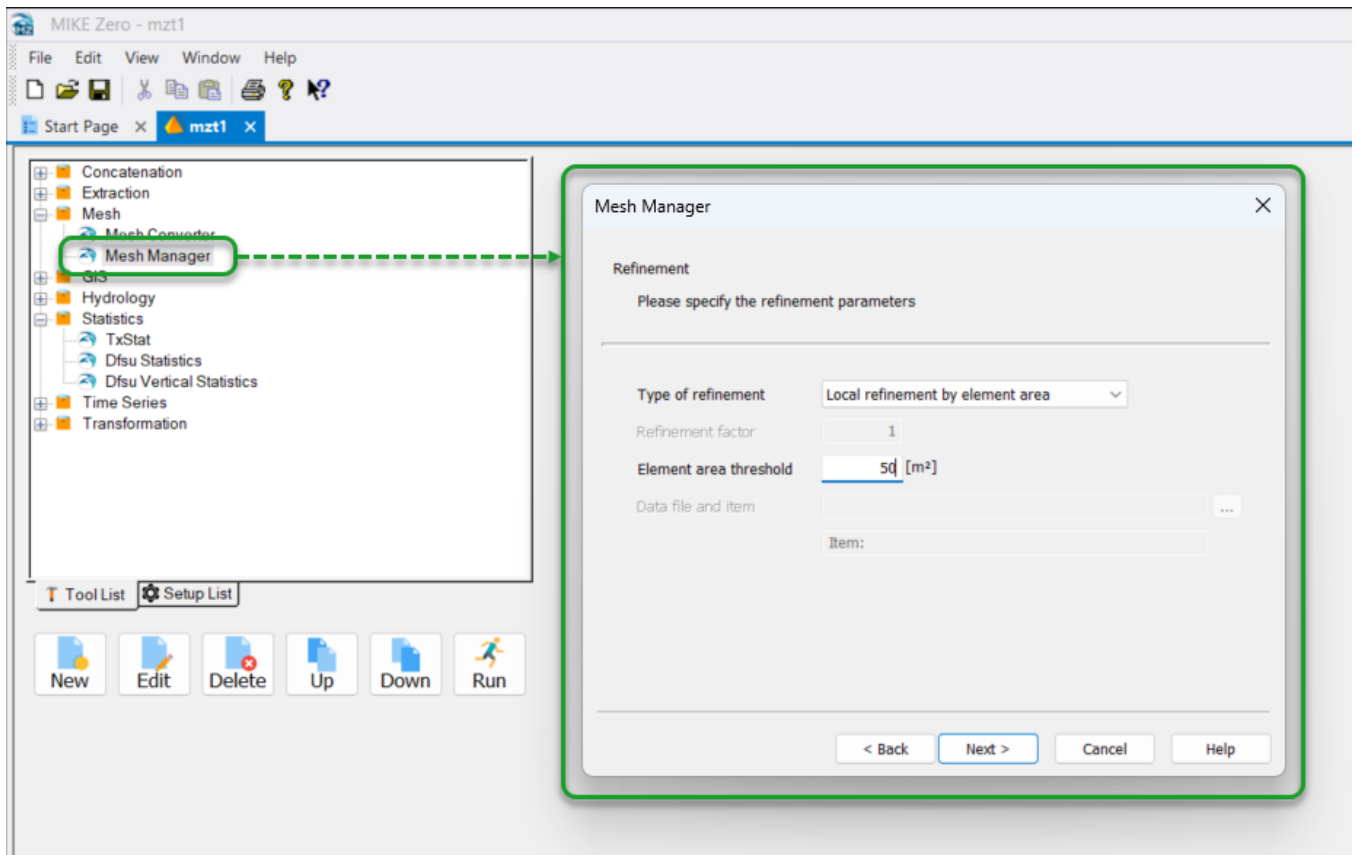


Figure 6 – Local refinement of meshes using element area in Mesh Manager tool

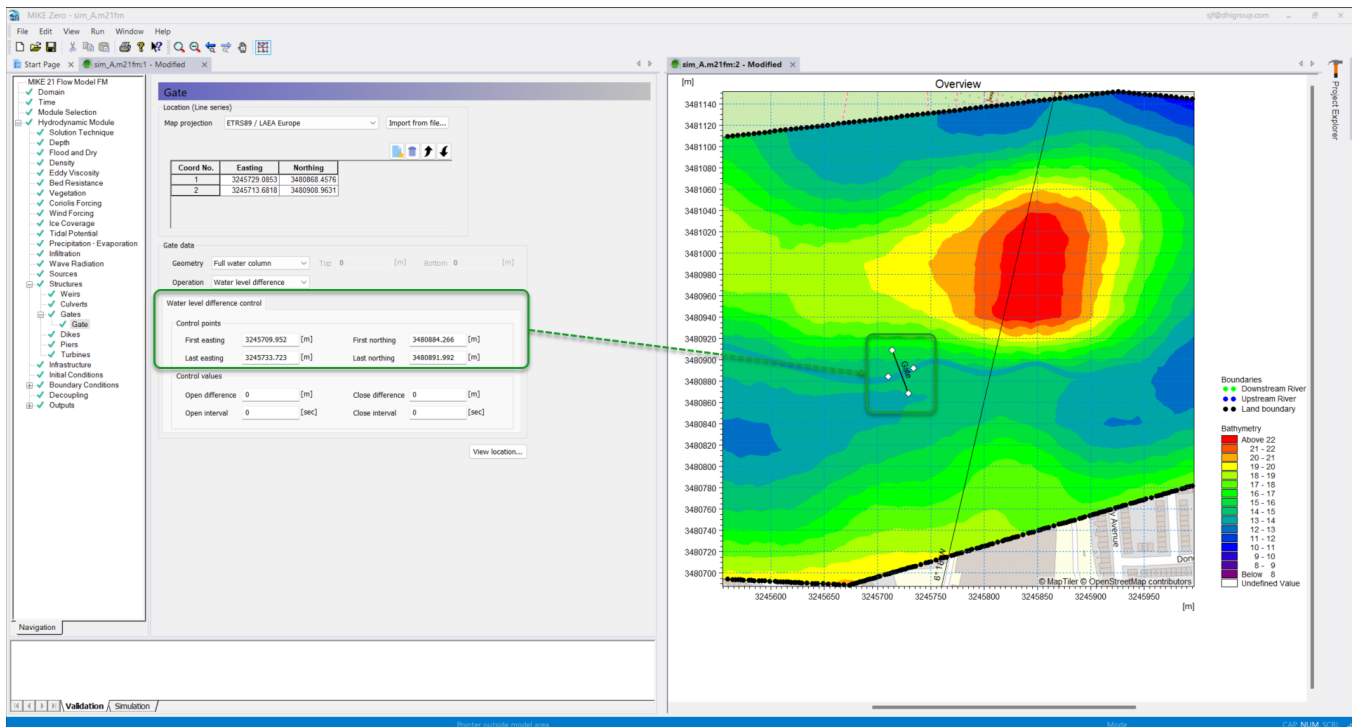


Figure 7 – Gate control points are now visible in the Graphical Overview

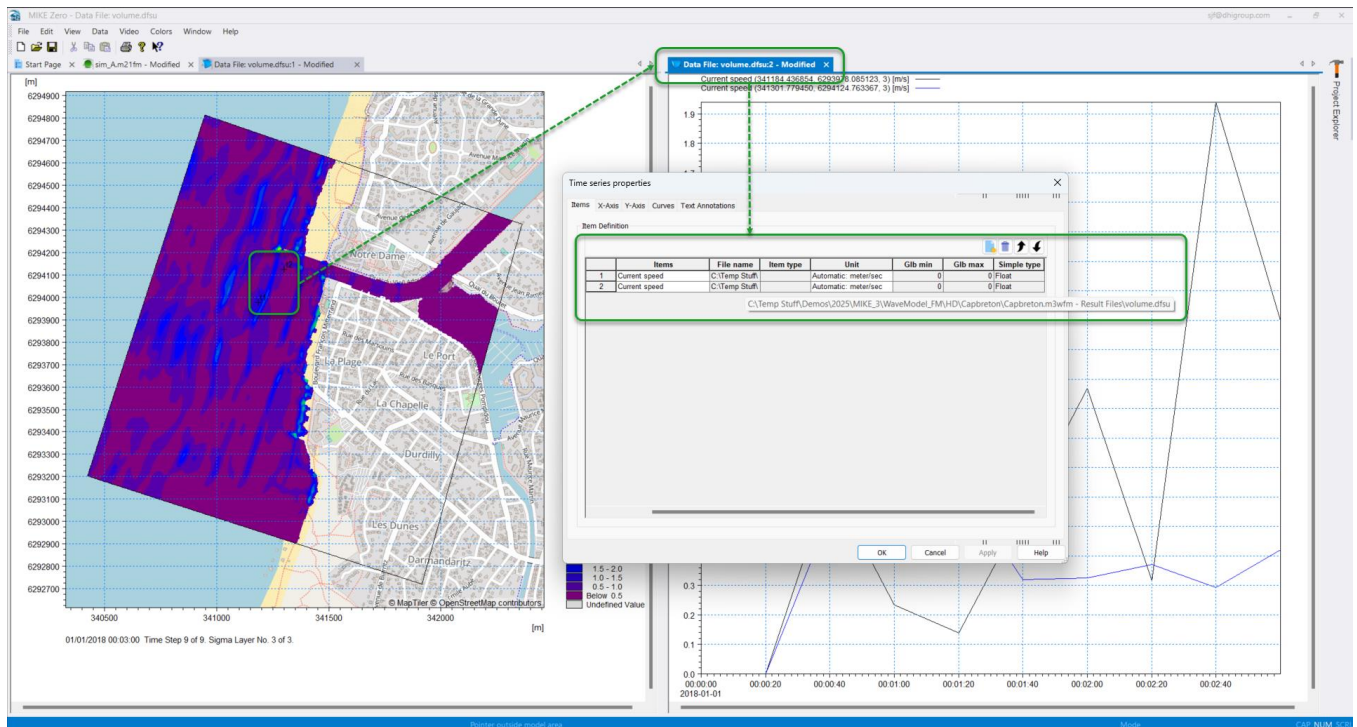


Figure 8 – Improved Properties dialogs for Time Series Plot and Profile Plot

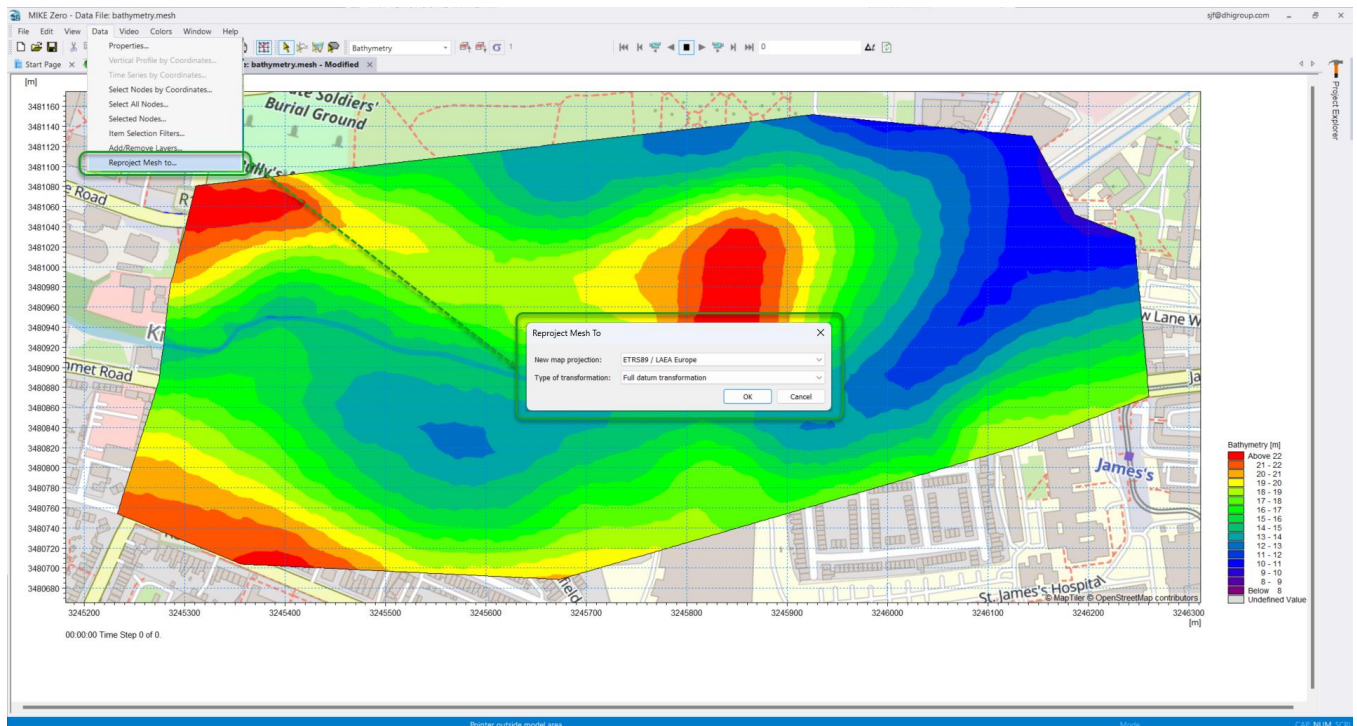


Figure 9 – Reproject mesh files from within Data Viewer



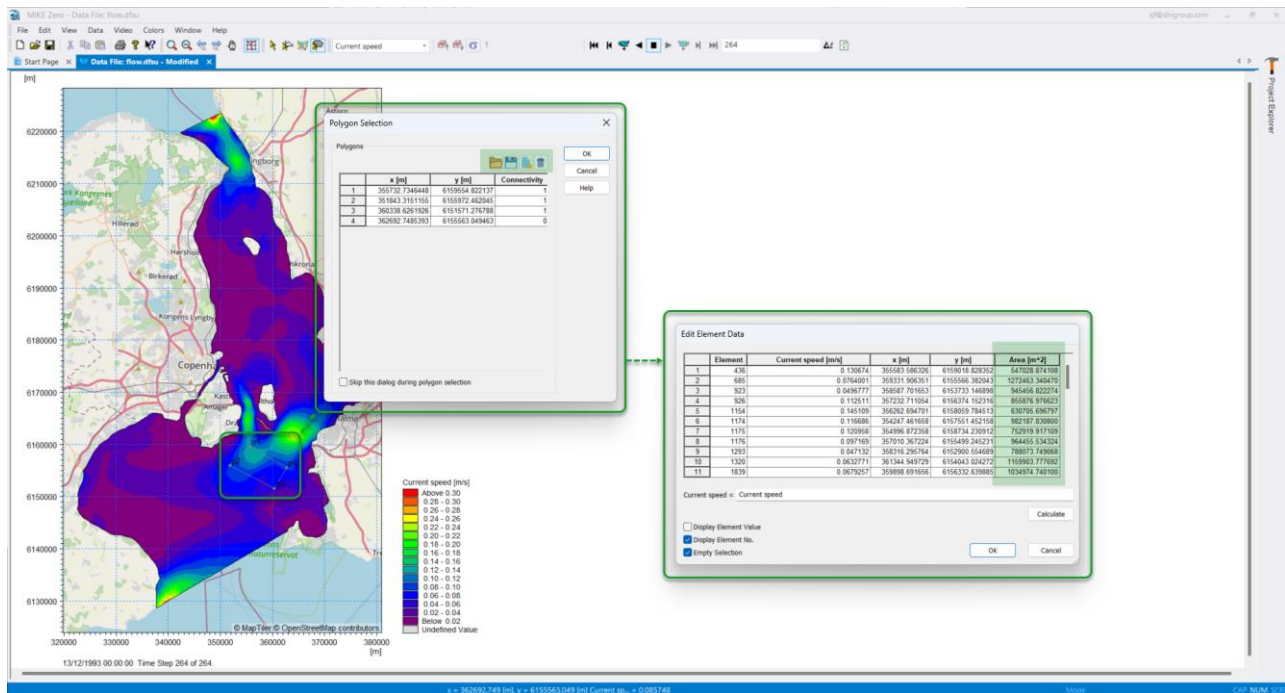


Figure 10 – Save and load polygon selections, and view element area, in Data Viewer

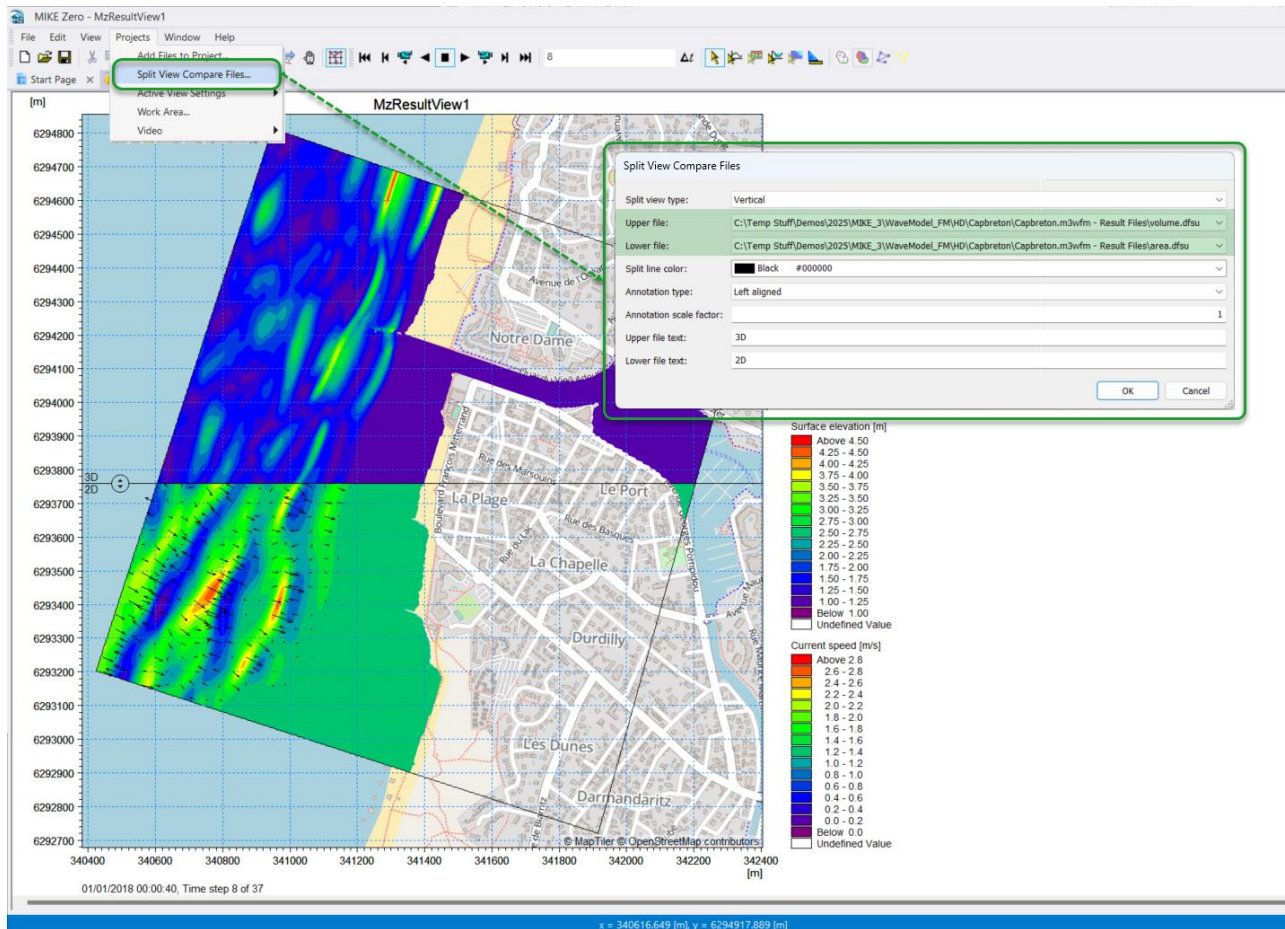


Figure 11 – Compare two files side-by-side in the Results Viewer using the slider-based 'Split View Compare Files...' function