Release Notes 2024   MIKE 3

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Introduction

Welcome to MIKE 3 2024

In this Release Note, you will find information about new features of MIKE 3, and what you need to know in order to install and get started with Release 2024.

MIKE 3 is a complete 3D modelling package for estuaries, coastal areas, and seas. It covers a wide range of hydrodynamic, environmental and sediment transport processes.

System requirements

Operating systems

Fully supported Windows operating systems *	Windows 11 Pro, version 23H2 (64 bit) Windows 10 Pro, version 22H2 (64 bit) Windows Server 2022, version 21H2 Windows Server 2019 Standard, version 1809
Non-supported but partially tested operating systems **	Windows Server 2016 Standard, version 1607

*   Fully supported operating systems are systems that have been tested in accordance with MIKE's Quality Assurance procedures and where warranty and software maintenance agreement conditions apply.

** Non-supported but partially tested operating systems are systems, which are not officially supported by the MIKE software products. These operating systems have only undergone very limited testing for the purpose of MIKE software, but the software and key features are likely to work. Installation of MIKE software on a non-supported operating system is done so at the user's own risk. The MIKE software warranty and software maintenance agreement conditions do not apply for unsupported operating systems and DHI is under no obligation to provide assistance or troubleshooting for cases where the software is being used on a non-supported operating system.

Please note 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 3 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 12.2 of the Nvidia® CUDA® Toolkit.

Installation

To install MIKE 3, please go to the MIKE Zero product folder and execute the setup.exe file either on the MIKE 2024 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 feature and systems updates.

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 installed separately.
- all licensed applications included in MIKE 2024 require a 2024 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. (License Manager Release Notes)

Product invocation

Launch 'MIKE Zero' from the Windows Start menu. Then you can select MIKE 3 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.

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 3 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 2024

New features

Module/type	New feature
MIKE FM	Significantly improved hydrodynamic calculations in the MIKE 21/3 Flow Models FM: • For the 2D and 3D Shallow Water Equations, the Riemann Solver has been changed from Roe to HLLC. • A Reimann Factor has been introduced for 2D and 3D Shallow Water Equation calculations. • For the 2D and 3D Shallow Water Equations and the 3D Navier-Stokes Equations, a reconstructed value of the depth at the face interfaces is required to calculate the Riemann states. Where appropriate, Chen & Noelle (2017) is now utilised. • For the 2D and 3D Shallow Water Equations and the 3D Navier-Stokes Equations, the treatment of the gravity term has been corrected. **Please note:** The above changes may have a particularly significant effect on simulation results when using the new first (low) order scheme in space. As such, when using the new first order scheme, recalibration of models prepared using MIKE 2023 software and earlier is recommended.
MIKE FM	Improvement of the numerical scheme for 2D and 3D Advection-dispersion calculations in MIKE FM. The scheme includes a discretisation that better considers neighbouring elements and improved treatment of the diffusion terms.
MIKE FM	Refactoring and improvements to the GPU version, including performance improvement of both the infrastructure feature and flow dependent bed resistance on GPU (certain calculations have been moved from CPU to GPU).

MIKE FM	Significant refactoring (cleanup and modernisation), corrections and improvements to the Mud Transport module to improve performance and accuracy (including support for double-precision calculations where appropriate). **Please note:** The above changes may have some effect on simulation results. As such, recalibration of models prepared using MIKE 2023 software and earlier may be required.
MIKE FM	Addition of many useful features in Mud Transport module. New features include; possibility to start the MT calculation at specified overall time step, inclusion of flocculation for individual fraction, new erosion description, constant critical shear stress for erosion for each individual fraction, new shear stress formulation, new spilling types for dredgers, specification of fraction weight distribution from file, new bed distribution output, new 3D bed parameters output, extended output of mean-velocity, and layer and fraction distribution as initial conditions.
MIKE Zero	A new Mesh Manager tool in MIKE Zero toolbox for global and local filtering (smoothing) and refinement of a mesh.
MIKE FM	Implementation of the user defined control factor for gates, operating in a subset of the water column, has been improved to consider dry land on one side of the gate.
MIKE ECO Lab	New and improved MIKE ECO Lab template creation workflows. It is now possible to merge templates using drag-and-drop (between templates) or copy-and-paste (from menus or shortcut keys). The user has several options in the new merge process, up to the automatic handling and merging of all dependencies of the selected expression. It is also possible to store a 'sniplet' of the selected expression to clipboard or text file (for import / export) to create a library of building blocks for new templates.
MIKE ECO Lab	The experimental 3-way MIKE ECO Lab coupling with hydrodynamics and heat transport (to model complex feedback loops) is now available in the UI.
MIKE ECO Lab	MIKE ECO Lab template management within the FM GUI has been significantly improved.
MIKE ECO Lab	Improvements to the MIKE ECO Lab plug-in interface and Extended Oil Spill templates on Linux.
MIKE Zero	Online street and satellite background maps from MapTiler are now available in key MIKE Zero editors and viewers.
MIKE Zero	A new Cloud Explorer tool has been developed to harness the power of the MIKE Cloud platform and to significantly enhance the flexibility of our Hybrid offerings. With Cloud Explorer it is possible to manage files and folders stored in a MIKE Cloud site from the MIKE Zero UI. Optimised syncing of files (between desktop and cloud) means that unnecessary duplication of files is no longer an issue when running cloud simulations. There is more control when saving results from cloud simulations (overwriting is now possible to save space). Handling of partial results files has been significantly improved (this work has also been included in the Simulation Launcher). It is now possible to run older engine versions (MIKE 2024 will be the default). Finally, information and logging options have been improved.
MIKE Zero	Many small corrections and improvements including: • [Ctrl]+[Shift]+[C]/[V] now copies spatial extents between Data Viewer pages. • Additional engine file extensions have been added to MzEngine.cfg for use with MzLaunch. • Flux items have been added to the list of inundation output items. • Improvements to the Time Series Editor. • Missing Ctrl-D and Tool Tips functionality has been added to 'Output of convergence information' in the Hydrodynamics module.
MIKE Zero	Improved isoline functionality. It is now possible to export isolines as Shape files and xyz files.
Mesh Zero	The Mesh Generator now allows the selection of rasters in .TIF or .TIFF format as source of scatter data for the interpolation on the mesh.

MIKE Zero	The following products, features and tools are fully decommitted with MIKE 2024, and are no longer available in the installers: • MIKE HYDRO River (including the MIKE 11 Cross Sections Editor) • MIKE 11 • MIKE FLOOD (including the MIKE Flood Toolbox) • DHI Remote Simulation • Notification of end of simulation via e-mail • Google Earth functionality within the Map Explorer

Fixed issues

Module/type	Error/Inconvenience
MIKE FM	A limiter has been added for the horizontal part of the vertical diffusion calculations in the advection-dispersion modules.
MIKE FM	For long culvert structures, a GUI error has been corrected where the momentum condition cannot be changed.
MIKE FM	Fall velocity in mud transport calculations has been corrected.
MIKE FM	In Data Merge FM, merging of DFS0 files has been corrected.
MIKE FM	Initial conditions for 2D and 3D dry areas have been improved.
MIKE FM	An error in bed resistance calculations for flow dependent Manning's in 3D has been resolved.
MIKE FM	Issues when using culvert structures with LONG/LAT coordinates have been corrected.
MIKE FM	Issues with initial bed thickness in sand transport calculations have been resolved.
MIKE FM	An error using wall friction in MIKE 3 Flow Model FM and MIKE 3 Wave Model FM has been corrected.
MIKE Zero	Time Series Editor has been improved for various regional settings.
MIKE Zero	Handling of delete values in the Time Series Editor has been improved.
MIKE Zero	In the Grid Editor, selection of values within polygons has been improved.
MIKE Zero	Handling of map projections in Mesh Generator has been improved.
MIKE Zero	Visualisation vertical sections created from 3D DFSU files has been improved.
MIKE ECO Lab	Particle mass budget calculations have been improved.
MIKE ECO Lab	The xenobiotics template has been updated.