Release Notes 2024

MIKE+

Contents:

Introduction

Welcome to MIKE+ 2024

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

MIKE+ is our new, flexible system for modelling and designing water distribution networks and collection systems for wastewater and storm water, as well as for modelling river networks and 2D surface flooding.

MIKE+ is offered in two versions:

- **MIKE+**
- **MIKE+ ArcGIS**

With MIKE+ you get:

- GIS-based model building and data management
- Powerful hydraulic simulation engine that supports parallel processing
- Integrated water quality, fire flow, real time control, flushing, multi-source tracing and hydraulic simulation (water distribution)
- Integrated water quality, control rules, LID and Soakway, rain dependent inflow and infiltration (collection system and river network)
- Long-term statistics (collection system)
- Integrated 2D hydraulic and water quality, dynamic interactions with collection system and river networks, surface flows visualisation (2D overland)
- Full undo and redo capability in all editors
- Thematic mapping and integrated result visualisation
- Open data models - easy integration with other applications
- Instant data checking and validation

With MIKE+ ArcGIS you get:

- Sophisticated GIS capabilities and smooth integration with ArcGIS Pro. MIKE+ embeds ArcGIS/ArcGIS Pro software for GIS-based model building, data management and result presentation.

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 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 (Full HD 1920 x 1080 recommended), 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, for MIKE+. Microsoft .NET Desktop Runtime 6.0.5, or a later patch release, is also required for MIKE+ ArcGIS.

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

** MIKE+ utilizing GPU for 2D overland simulations 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 12.0 of the Nvidia® CUDA® Toolkit.

Installation

To install MIKE+:
To install MIKE+, please go to the MIKE+ 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+.

To install MIKE+ ArcGIS:
To install MIKE+, please go to the MIKE+ 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+.

Please choose ArcGIS Pro's "ArcGISPro.msi" to install ArcGIS Pro separately. This version of MIKE+ comes with ArcGIS Pro 3.1. You find the installation of ArcGIS Pro in the folder "Prerequisites\ArcGIS Pro 3.1". Other versions of ArcGIS Pro might also work with MIKE+ but are not covered by warranty and software maintenance agreement conditions.

Optional installation of PostgreSQL/PostGIS:
Both MIKE+ and MIKE+ ArcGIS are installed with SQLite/SpatiaLite. If you wish to use the alternative database option, PostgreSQL/PostGIS then please install the two products found in the "Prerequisites\PostgreSQL 15.4" and "Prerequisites\PostGIS 3.4" folders. Before you install the two products, we recommend that you read the note describing how to install PostgreSQL/PostGIS - this 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 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+ from the Windows Start menu.

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+ 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
General	The table below the profile plot has been revisited. Data are now presented in a true table, and the style of its content (e.g. font and rotation) can be customised. The table can now also show the values from user-defined columns created in the links or nodes editors.
General	Zooming on the profile plot has been improved. The new default zoom option is to zoom to a rectangle. While zooming to a rectangle, drawing a line along the X or Y-axis zooms only on this axis, leaving the other axis unchanged. Zooming in/out using the mouse wheel zooms at the position of the cursor.
General	BIM files (*.ifc) can now be displayed on the map.
General	The symbology editor now allows to hide polygons' contours, by setting the outline thickness to 0.
General	The symbology editor offers new color ramps.
General	A new option has been added to control the symbology of line layers, to allow showing labels horizontally on the map, instead of showing them parallel to their corresponding line.
General	In the Results table window, a new option in the context menu opens selected result points in a time series plot.
General	A new option in the context menu of the time series plot copies the tabular data to the clipboard.
General	A new option 'Remove items from scenario' is added to the Scenario Manager. It removes items from a selected alternative, so that they become inherited from the parent alternative again.
General	A new 'Duplicate' button is added to the 'Scenarios' editor, to copy the selected alternative.
General	The 'Versions management' tools allow to customize the list of database's tables and columns to compare between the model versions.
General	The tool to trace forward or backward from results has been improved, to make it possible to change the time step of the results used for the tracing, without closing the tool.
General	The 'ArcGIS Integration' tool is accessible also in results presentation mode (when no model database is opened) to export results layers.
Collection System	Couplings can now be defined between the Collection System network and MIKE SHE. It is enabled by activating the 'Coupling to MIKE SHE or FEFLOW' option in the 'Model type' editor. After setting up a Collection System model including such couplings, the .m1dx and .couple simulation files must be exported from the File \ Export menu, for use in MIKE SHE.

Collection System	In the 'Cyclic profiles' editor, a new 'Multipliers scaling' option is added, to control whether pattern's multipliers are rescaled / normalized, or kept unchanged.
Collection System and Rivers	A new special selection is added to the 'Map' tab of the ribbon, to select nodes or links connected to selected catchments.
Collection System and Rivers	The decay of WQ components (used in the Transport module) can now be described with local values on the network.
Collection System and Rivers	In the 'MIKE ECO Lab constants' editor (used in the Transport module), it is possible to specify local values on the network.
Collection System and Rivers	A new tool to create RDI elevation zones from a DEM is available. It is for use with RDI hydrological model when snow melt is simulated using elevation zones. The tool is opened from the list of 'Special tools' in the 'Catchments' tab of the ribbon.
Collection System and Rivers	Data shown on profile plots can be exported to a text file also for projects of type 'Rivers, collection system and overland flows', from the context menu of the profile plot window. This was previously possible only for Water Distribution networks.
Collection System and Rivers	The 'Catchment processing' tool has a new option to compute contributing areas for land uses. This option is for use with catchments set to use a 'Land use distribution' of their parameters. It compares the catchments polygons with the extents of land use polygons loaded on the map, to automatically define the land uses covering the catchments, with their percentages of coverage.
Collection System and Rivers	When activating the 'Use land use distribution' option for a catchment, it is now possible to use the RDI model as a land use. This allows combining multiple RDI models (each with its own RDI parmeters set) in a single catchment.
Collection System and Rivers	When using a RDI hostart in the 'Simulation setup' editor, it is now possible to control the date and time to use as initial condition, from the selected hotstart file.
2D overland	The 2D simulation engine has been significantly improved. The Riemann solver has changed from Roe to HLLC method. Handling of flooding and drying has also been improved. Finally, the handling of reconstructed values at element faces has also been improved. Differences of results compared to previous versions are expected, especially using the low order space discretization. The improvements should increase stability and especially remove the overestimation of the current speed at river banks or other steep slopes, sometimes observed in previous releases.
2D overland	A new tool 'Create flood map' is available, to convert 2D flooding results (from .dfs2 or .dfsu files) to a polygon layer, where each polygon represents a group of neighboring cells with the same category of results (e.g. same class of water depth). All resulting polygons are saved in a unique shape file. The tool offers some filters to remove or merge polygons which may be considered too small. The tool is opened from the 'Results' tab in the ribbon.
2D overland	Rasters in .TIF and .TIFF format can be used as source of elevation data for interpolation on the 2D domain, after loading them on the map.
2D overland	New result items related to flux magnitude can be saved in '2D flood statistics' result files.
Water Distribution	New options are available to perform water balance computations in the network zones: • In the 'Zones' editor, time series from flow monitoring stations can be associated to specific zones, to estimate the amount of water entering or leaving the zone. • A new tool to estimate the average demand and leakage flow in the zones, based on the flow time series associated with the zones, is available in the 'Demand tools' list from the 'WD network' tab in the ribbon.

	• A new tool to estimate the demand pattern in the zones, based on the flow time series associated with the zones, is available in the 'Demand tools' list from the 'WD network' tab in the ribbon. It can produce several daily or weekly patterns per zone.
Water Distribution	VSD pumps can now be controled by the computed flow in a selected pipe, pump or valve.
Water Distribution	Two new derived result items are available, respectively named 'Accumulated Flow' and 'Accumulated Fow (Absolute)'. They provide time series of volume accumulated over time, computed from link flow time series.
Water Distribution	Carbon emission computed during cost analyses is no more a derived result, but a result computed during the simulation and saved to the result file. Therefore, the accuracy of this result item no longer depends on the saving frequency of the results.
Water Distribution	New special selections are added to the 'Map' tab of the ribbon, for use with 'Optimization' and 'Autocalibration' special analyses. These new special selections allow to select network items used in the selected controls or targets from the 'Optimization' and 'Autocalibration' editors.
SWMM	A ‘Change type’ button has been added to the ribbon in the ‘CS network’ tab, to convert links to other types.
SWMM	A new ‘Slope’ field has been added to the ‘Conduits’ editor. Slopes are computed for all conduits when pressing the ‘Calculate’ button. Calculated slopes can be displayed as X-axis data under a profile plot.

Fixed issues

Module/type	Error/Inconvenience
General	Various improvements or corrections have been made to the import from MIKE URBAN, MIKE HYDRO River, MIKE11 or MIKE FLOOD model setups. This especially includes automatic conversion of MIKE FLOOD couplings between CS pumps and river, to connections between the CS and the river networks.
General	The performance of the ‘Versions management’ tool has been improved. The execution of the tool is much faster when reporting large numbers of differences.
General	When exporting a profile plot view to a CAD file, the exported axes were wrong if the profile plot window was not zoomed to the full extent prior to the export.
General	While editing the symbology for map layers from a geodatabase, using the ‘Unique values’ symbology type failed to show the list of fields available for the layer.
General	While editing the symbology for map layers from a CAD file with the ‘Unique values’ symbology type, the ‘Add all’ button failed to show the correct list of unique values.
General	Displaying WMS server layers on the map is faster.
General	Displaying background images on the map is faster, especially with TIF images.
General	An unexpected error occurred when loading a map layer's symbology from a file, if the 'Symbology settings' editor was opened.
General	The option 'Zoom to full extent' in the profile plot did not actually zoom out to the entire extent.

General	The speed of the 'Import and export' tool has been improved when importing data on the local machine to a PostGIS database on a distant server.
General	MIKE sometimes stopped working when using the Identify tool with a CAD file loaded on the map.
General	Several corrections have been made to the 'ArcGIS Integration' to correct exported layers.
General	Deleted parts of the pipe network were sometimes still visible in the 'Network overview', when zooming out.
General	An error message was shown on the map when displaying labels showing the content of a user-defined expression column.
General	The .mupp file became corrupt if it was saved while the 'Versions management' tool was opened.
General	In the 'Import and export' tool, the Copy / Paste options in the context menu didn't properly copy condition expressions, if any.
General	While loading a result file, the "Ts file properties" window failed to show the actual start time of the selected result file.
General	Saving an animation of results to .avi file did not work if the Map window was not in focus.
General	When comparing results time series from different files at the same location, the time series plot's table can now show the file names in the header of the table.
General	In the 'Interpolation and assignments' tool, the method 'Assignment from network neighbours' did not work with text string data.
General	The location of tiles was not always cleared on the map after using the tool 'Combine tiles'.
General	The 'Model and result report' tool didn't allow to join input data with derived results.
General	When exporting a layer to shape file from the map, the exported layer contained wrong locations if the MIKE+ setup is defined in a SI unit system but with a coordinate system defined in US units.
General	The 'Versions management' tool sometimes reported an unexplained failure while updating a model version.
General	Snapping to the network (e.g. to connect a pipe to node) stopped working after using the 'Measure' tool.
Collection System	Pattern values were not correctly applied in the simulation if the pattern definition table was not sorted by increasing time. The simulation is now independent from the sorting. This pattern definition table has also been reviewed to better show the time span covered by each multiplier.
Collection System	Water level was filled below the bottom level of the pipe, if the pipe invert level is higher than the connected node's bottom level.
Collection System	The 'Critical level' shown on profile plots was a point layer, and is changed to a line layer.

Collection System	In the 'Curves and relations' editor, the Volume data from 'Basin geometry' tables are now plotted with intermediate interpolated points to better show the volume changes as considered in the simulation.
Collection System	New merged catchments created from the 'Network simplification' tool had their 'Network type' always undefined.
Collection System	After merging catchments with the 'Network simplification' tool, the 'Load type' of corresponding catchment connections was incorrect.
Collection System	In the 'Connection tool', a new 'Target network type' filter has been added to control which types of nodes or pipes can be connected.
Collection System	Nodes of type 'Basin' could not be renamed more than once.
Collection System	A wrong unity type was shown for values in the 'Boundary conditions' editor for boundary type 'Exfiltration from node'.
Collection System	The ‘Network simplification’ tool considered some pipes as unliked and removed them during trimming operations, although they were connected to the rest of the network.
Collection System and Rivers	The expression of ‘Variable expression’ sensors, used in combination with the Control module, was limited to 40 characters. This length has been increased to accommodate longer expressions.
Collection System and Rivers	An unexpected error was reported when trying to run a simulation including control rules, if two or more actions referenced the same table from the ‘Curves and relations’ editor.
Collection System and Rivers	It was not possible to load manually a rainfall-runoff result file, when catchments use a combination of hydrological models (with RDI).
Collection System and Rivers	After updating catchments properties using the 'Import and export' tool, the catchments were unexpectedly moved on the map.
Collection System and Rivers	Link water level was not shown on profile plots, in some parts of natural channel or river networks.
Collection System and Rivers	The simulation failed when 'Accumulated inflow’ or 'Accumulated outflow' result items were saved to result files.
Collection System and Rivers	An unexpected error occurred when opening the 'Boundary overview' when some boundary conditions are set to use a SWMM result file as input.
Collection System and Rivers	Some results were not refreshed after re-running a simulation when results are saved to a custom folder with relative path.
Collection System and Rivers	The 'Catchment processing' tool computed incorrect imperviousness values in case of overlapping shape files.
Collection System and Rivers	The 'Catchment processing' tool computed incorrect imperviousness values when using multi-part shape files.
Rivers	When moving a cross section with the option ‘Recompute coordinates’, the new coordinates were wrong if markers 1 and 3 were not set to the end points of the cross section.

Rivers	When creating cross sections from survey points using the tool ‘Create and update cross sections’, the generated cross sections sometimes wrongly extended on the map until they reached other parts of the river on the other side of a meander.
Rivers	The river bottom level shown on profile plots used to be the level of the marker 2 in the cross sections. This was possibly different than the bottom level, and profile plots now show the lowest level found between markers 1 and 3 in the cross sections.
Rivers	An error related to DEM file path was sometimes issues when interpolating results on a 2D map.
Rivers	Some river structures were deleted when their containing river was split.
Rivers	Closed cross sections were always shown on the map as a very short line, instead of showing the actual cross section's width.
2D overland	When converting input rasters to .dfs2 files using the ‘Combine DEM tiles’ tool, the created .dfs2 file was not suitable for use as input topography for interpolation of the 2D domain, due to a ‘Land value’ being set too low in this file. The .dfs2 file is now created with a ‘Land value’ set higher than the maximum elevation in the file, so that all cells are included in the interpolation.
2D overland	When importing 2D culverts from a shape file, the selected ID attribute from the shape file is now used to name the created culverts.
2D overland	The tool ‘Exclude rivers’, used to exclude the river extent from the 2D domain, failed for rivers having negative chainages.
2D overland	In the ‘2D domain’ editor, the option ‘Edit in Mesh Generator’ to edit a flexible mesh sometimes led MIKE+ to not respond.
2D overland	The 'Depth threshold value' used for '2D flood statistics' result files did not accept decimal values.
2D overland	The simulation reported a syntax error when an open boundary was not correctly located on the borders of the mesh or if its location was missing. The workflow for creating 2D boundary conditions has been improved to avoid this situation.
2D overland	The simulation failed to start when including a 'Single distributed source' boundary condition associated with a time series.
2D overland	The symbology editor did not allow applying the 'Unique value' symbol type for the 2D boundary conditions layer.
2D overland	Importing multiple dikes using the 'Insert from file' button, and selecting a multi-part shape file, caused MIKE+ to stop working.
Water Distribution	The 'Stop' button, used for cancelling a simulation, was always disabled during Cost Analysis simulations.
Water Distribution	The 'Demand Statistics' reported wrong values for some model setups.
Water Distribution	Saving results to a custom folder could not create folders with relative path.
Water Distribution	While deleting a pipe, associated controls were not deleted.
Water Distribution	The 'Aggregation tool' window became invisible with some operating systems because it was placed in the background of the applications.

Water Distribution	Flushing Analysis simulations did not work properly when point is used as decimal separator.
Water Distribution	Fire flow calculations were wrong when the search for critical nodes is activated.
SWMM	Several corrections have been made to the import from .inp file and export to .inp file.
SWMM	External time series in .dat format were not supported when they didn't contain a header row.
MIKE 1D engine	Fixed error in rainfall-runoff summary when running RDI (TT62253).
MIKE 1D engine	Fixed error in long-term simulation job re-do feature when running RDI (TT63131).
MIKE 1D engine	Fixed errors in culvert flow conditions calculation (TT63458, TT63813).
MIKE 1D engine	Fixed error occurring when running data assimilation with weighted rainfall (TT63477).
MIKE 1D engine	Fixed error when loading RDI calibration data after simulation (TT63511).
MIKE 1D engine	Enabled conversion to relative path for data assimilation observation file when updating m1dx file to release 2024 (TT6329).
MIKE 1D engine	Corrected unhandled exception occurring when applying grid-distributed weights with a time-varying rain grid (TT64026).
MIKE 1D engine	Fixed bug in natural flow initial condition (TT64049).
MIKE 1D engine	Enabled calculation of transverse flow area in basins to support ECO Lab water quality calculations (TT63779).
MIKE 1D engine	Fixed error in Analyze Network tool resulting in NaN values (TT64001).
MIKE 1D engine	Fixed error causing results from failed jobs to be written to the long-term simulation statistics output file (TT63495).
MIKE 1D engine	Updated html continuity balance to include contributions from lateral links located along collection system 'natural channels' (TT64129).
Couplings engine	Fixed instability occurring at source links (TT63595).