Release Notes 2021

MIKE+

Contents:

Introduction

Welcome to MIKE+ 2021

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+ 2021.

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, real-time control, LID and Soakway, rain dependent inflow and infiltration and long-term statistics (collection system)
- Integrated water quality, LID and Soakway, rain dependent inflow and infiltration (river network)
- 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

The recommended minimum system requirements are:

Fully supported Windows operating systems *	Windows 10 Pro, version 20H2/2009 (64 bit) Windows Server 2016 Standard (64 bit) Windows Server 2019 Standard (64 bit)
Processor	x64, 2.2 GHz (or higher)
Memory (RAM)	2 GB (or higher)
Hard disk	40 GB (or higher)
Monitor	SVGA, resolution 1024x768 in 16-bit color
Graphics adapter	64 MB RAM (256 MB RAM or higher recommended), 32-bit true color **
File system	NTFS
Software requirements	Microsoft .NET Framework 4.7.2 or later

* 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.

** MIKE+ utilizing GPU for 2D overland simulations requires a Nvidia graphics card with compute capability 5.2 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 11.0 of the Nvidia® CUDA® Toolkit.

Installation

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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+:
To install MIKE+, please go to the MIKE+ product folder and execute the setup.exe file either on the MIKE 2021 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+. When the installation is completed, please follow the instructions here to adjust the installation settings.

To install MIKE+ ArcGIS:
To install MIKE+, please go to the MIKE+ product folder and execute the setup.exe file either on the MIKE 2021 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+. When the installation is completed, please follow the instructions here to adjust the installation settings.

Please choose ArcGIS Pro's "ArcGISPro.msi" to install ArcGIS Pro separately. This version of MIKE+ comes with ArcGIS Pro 2.5, but you can also use your own version of ArcGIS Pro 2.2 or higher. You find the installation of ArcGIS Pro in the folder "Prerequisites\ArcGIS Pro 2.5".

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 11.1" and "Prerequisites\PostGIS 2.5.1" 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

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 FAQ.

If you experience any difficulties, or if you have questions, please contact our Customer Success team by e-mail or phone:

Customer Success
DHI A/S
Agern Allé 5
DK-2970 Hørsholm
Denmark

mike@dhigroup.com
Tel: +45 4516 9333

You can also contact your local Customer Success team for support in your local language. You can find the list here.

New features and fixed issues

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Release 2021

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 short descriptions of the most significant news in Release 2021 below.

New features

Module/type	New feature
General	MIKE URBAN+ is renamed MIKE+. MIKE+ is a product supporting Urban, River and Flood applications.
Collection System	SWMM5 is now supported. It can be chosen as a new model type when creating a new model setup. Note that Water Quality modelling is not supported in this first release of SWMM in MIKE+.
Water Distribution	Water Hammer analyses can now be performed. The Water Hammer simulation engine has been improved compared to its previous version in MIKE URBAN classic, with: • Improvements to Air valves • Improvements to Check valves (user defined cracking pressure and velocity, opening and closing times) • Support of Hazen Williams and Manning friction • Ability to cancel the simulation while it is running • Improved error reporting when reading the input file • Orifice outflow (pressure dependent turnout).
Rivers	The Water Quality module (Advection-Dispersion and MIKE ECO Lab) can now be used with River network models.
2D overland	MIKE+ (Collection system and river networks) can be coupled to an existing MIKE 21 FM setup file.
Collection System	The Network simplification tool has been significantly improved, including new options to: • Trim networks • Merge pipes • Merge catchments • Reconnect the disconnected features (boundary conditions, catchments, etc.) • Convert the pipe network to a set of basins and orifices for surrogate applications.
General	Background maps can be obtained from WMS servers. Note that this option supports only WMS servers with projected map projections (not geographical projections) and that the map projection from the WMS server must be the same as the projection used in MIKE+.
General	The map projection used in MIKE+ can be modified. While selecting a new map projection, it is possible to convert coordinates of features in the model setup to the new coordinate system. Note that 2D files (including e.g. existing 2D overland domain file) cannot be re-projected.
General	GeoTIFF files and Arc/Info binary grids are now supported: layers can be displayed on the map and used in the 'Interpolation and assignment' tool.
Collection System	Custom units can now be applied with the RTC module.
2D overland	The coupling to River ends, with rivers created in MIKE+, is now supported.
2D overland	The hydrodynamic solver has been extended with the possibility to simulate one-phase flows with different flow characteristics than clear water, e.g. oil or water with high concentrations of debris or mud.
Rivers	River cross sections can be digitised and edited on the map.

Rivers	A new ‘Create and update cross sections’ tool is available for use with river networks, allowing to: • Create multiple new cross sections, from survey points and/or DEM • Update existing cross sections with a new DEM • Assign the distributed roughness values in the cross sections, from a GIS layer.
Rivers	A new ‘Structure link’ type of river has been added. A structure link is a simple type of river with no cross section but with structures placed at the center. It is e.g. used to describe overbank spilling. Any type of river structure can be added to a structure link.
Rivers	The scenario manager now allows defining scenarios with changes on the river network.
2D overland	Buildings and roads can now be defined from a polygon layer, to apply special treatments in the 2D overland simulation: • Buildings are elevated and rain falling on their roofs can now weir onto surrounding ground • A building runoff factor can delay rainfall runoff from buildings – for example, dealing very simplistically with complex roof construction or green roofs • Rain falling on buildings can be retained in the buildings. It is possible to position a coupling to the collection system network in the building area to convey rainfall to the network • Topography in roads or embankment areas can be raised / lowered.
2D overland	Surface roughness and infiltration can now be defined from a polygon layer, for example mapping to the land cover.
2D overland	Surface roughness and infiltration rates can now be defined as a function of the simulated water depth or flux.
2D overland	Insertion of new 2D dikes from a file has been improved. If the input file is a 3D shape file (containing crest levels in the lines geometry), then all the lines from the file are imported simultaneously as separated dikes, and the crest levels are also imported from the file.
2D overland	The result file type 'Section discharge' now supports polylines shapes, instead of straight lines.
2D overland	The result file type '2D flood statistics' has been extended to save new statistic items from flood simulations.
2D overland	New result file types ‘2D culverts results and ‘2D weirs results’ have been added, to save the discharge through these 2D structure types as well as water level upstream and downstream.
Water Distribution	Batch runs are now also available for Water Distribution.
Water Distribution	Demands can now be aggregated for selected items only.
Water Distribution	A new ‘Flow modulated’ setting type has been added for PRV valves.
Water Distribution	Zones can now be generated using the zone ID information specified in the Pipes properties.
General / Results visualization	A new ‘Cross section plot’ tool is available in the Results ribbon, and displays animated water levels in cross sections from river results, 2D overland results, or a combination of both.
General	When importing data from a geodatabase, it is now also possible to import data from plain tables, i.e. tables without geometry on the map.
MIKE 1D engine	Added support for setting an outlet type node as the tail node for Pressure Mains (TT56148)

Fixed issues

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Module/type	Error/Inconvenience
General	The list of supported map projections has been significantly increased, offering new and updated map projections. It is possible to change the model projection to a new map projection to correct eventual shifts of the background maps.
General	Geometries (coordinates) were sometimes not imported correctly during the import from a .sqlite database.
General	An unexpected error about an invalid source type was sometimes obtained while attempting to select a geodatabase to import data from.
General	Arc/Info binary grids could not be loaded to the map or were wrongly displayed.
General	Error checking has been improved in multiple editors to detect more errors in input data.
Collection System	The water level filling was incorrectly plotted on the Profile plot, when there is an offset between the pipe's and the node's invert levels.
Water Distribution	Various issues have been corrected in relation with Flushing Analysis.
Water Distribution	Extended rules were not always imported from EPANET .inp file.
Water Distribution	Pipe regulations were not always imported correctly from EPANET .inp file.
Water Distribution	The curve plotted in the Pumps editor had a wrong shape for pumps with relative speed, and was plotted with wrong units.
Water Distribution	The demand coefficient specified in the 'Multiple demands' editor was not taken into account during the simulation.
Collection System	An unexpected error was sometimes returned while executing batch runs.
2D overland	Automatic import from MIKE 21 FM sometimes failed.
Collection System	Q-H weirs were listed with links in the result documents, instead of weirs.
Collection System	The unit shown for geometric catchment area was wrong.
Collection System	The import of catchment connections sometimes failed when the 'Topology' option was active, even though this option was not supposed to apply to catchments import.
Collection System	Rainfall-Runoff results could be wrong with Time-Area method when using user-defined Time-Area curves.
Collection System	There was an error in the accounting of events for a particular month/year in monthly/annual statistics, when these errors were triggered by a job failure in the following month/year.
2D overland	An unexpected error was returned by the simulation engine, when including both 'Natural channel' couplings to 2D overland, and also coupling to a MIKE HYDRO River setup with 'River bank' couplings.
2D overland	An error was obtained from the simulation engine when coupling weirs to the 2D overland model, considering that the coupling was made with an outlet.

2D overland	A wrong unit conversion sometimes applied to the 2D domain's elevations, when the values were specified in feet in a flexible mesh file.
2D overland	dfs2 files were wrongly placed on the map when they were defined in a map projection expressed in feet units.
1D-2D coupling	Fixed unhandled exception occurring during 1D-2D coupled simulation (TT56672)
MIKE 1D engine	Fixed error in calculation of time-centered flow area in ECO Lab velocity calculations (TT56716)
MIKE 1D engine	Fixed error occurring when using gridded rain boundary in network HD simulation (TT56534)
MIKE 1D engine	Fixed error with MIKE 1D LTS statistics caused by job failure (TT56665)
MIKE 1D engine	Added support for setting outlet node type as tail node for pressurized sections (TT56148)
MIKE 1D engine	Fixed error in reporting of runoff diverted to surface in urban flood models (TT54811)
MIKE 1D engine	Fixed error in computation for 1D engine where information about opening valve from hotstart not used (TT53043)
MIKE 1D engine	Fixed error with disabling of flow regulation at a link in a MIKE+ model (TT56583)
MIKE 1D engine	Fixed error causing long initialization times in complex MIKE+ setups (TT56849)
MIKE 1D engine	Fixed error with transmission of minimum reach length information in the MIKE+ to MIKE 1D bridge (TT56914)
MIKE 1D engine	Added error message when weir crest level below node invert level (TT56032)
MIKE 1D engine	Fixed bug occurring when additional results for Froude number calculation in HD simulation selected in MIKE+ (TT56054, TT56935)
MIKE 1D engine	Fixed error in validation warning about weir Q-H curves (TT56080)
MIKE 1D engine	Fixed error occurring when a combination of load points on a node and link use the same load category (TT54478)
MIKE 1D engine	Fixed errors with ECO Lab results (TT56130, TT56773)
MIKE 1D engine	Fixed unhandled exception when running flood with MIKE 1D AD module (TT56523)

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