Release Notes 2020

MIKE HYDRO

Contents:

Introduction

Welcome to MIKE HYDRO 2020 Update 1

In this Release Note, you will find information about new features of MIKE HYDRO, and what you need to know in order to install and get started with Release 2020.

MIKE HYDRO is our latest generation Graphical User Interface framework for some of the MIKE Water resources software products. Featuring a map based and easy-to-use Graphical User Interface, MIKE HYDRO is a MIKE Zero component which includes:

- MIKE HYDRO Basin: a modelling package for water resources planning and management in river basins
- MIKE HYDRO River: a one-dimensional modelling package for comprehensive river network modelling.

System requirements

The recommended minimum system requirements are:

Fully supported Windows operating systems *	Windows 10 Pro, version 1909 (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.

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 HYDRO, please go to the MIKE Zero product folder and execute the setup.exe file either on the MIKE 2020 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

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 HYDRO 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 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

Release 2020 Update 1

Every new release of MIKE HYDRO 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 2020 Update 1 below.

New features

Module/type	New feature
MIKE HYDRO River	A number of new functionalities have been added for Storages: • Initial conditions in Storages may now be specified in the 'HD initial conditions' page • Discharge boundary conditions may now be applied to Storages in the 'Standard boundaries' page • Runoff from catchments may now be applied to Storages in the 'River links' page • Water level simulated in Storages may be used as a sensor, in the 'Sensors' page, for use in control rules for structures • The tool 'Additional storage area' has been renamed 'Compute storage from DEM', and its Elevation-Area relationships obtained from a DEM can now also be used in Storages • The Storage's ID can now be shown as label on the map.
MIKE HYDRO River	The 'Multiple zones' option for defining the resistance in the 'Bed resistance' page has been enabled. It allows specifying the bed resistance in various horizontal layers / zones, instead of applying a uniform value. When this new option is used, the bed resistance values for all layers must be specified, as well as the threshold levels between layers.
MIKE HYDRO River	Advection-Dispersion simulations can be run decoupled from the Hydrodynamic simulation. This option significantly speeds up the AD simulation, which is very useful when multiple AD simulations have to be executed with the same HD simulation. To enable this option, activate the Advection-Dispersion simulation in the 'Modules' page but deactivate the Hydrodynamic simulation, and select the input hydrodynamic result file in the 'River network' parameters, in the Setup tree view.
MIKE HYDRO River	Global boundary conditions varying in time and space can now be defined in 2D data files (.dfs2 files). This applies to global rainfall and global evaporation boundary conditions, as well as to groundwater leakage.
MIKE HYDRO River	Spatially-varying forcings for MIKE ECO Lab can now be defined in 2D data files (.dfs2 files).
MIKE HYDRO River	When cross sections are extended using DEM data, the extension is now controlled by the settings in the 'Digital Elevation Model' page. This applies to the 'Trim or extend cross sections' tool and to the 'Extend' button on the map.
MIKE HYDRO River	A new MIKE ECO Lab template for heat balance simulations is provided with the installation.
MIKE HYDRO Basin engine	Yield calculations now continue after the last day of irrigation (when irrigation ceases before the harvest date).
MIKE HYDRO Basin engine	Soil moisture balance calculations now continue during fallow periods.

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Fixed issues

Module/type	Error/Inconvenience
MIKE HYDRO River	Markers were sometimes not moved to the proper locations, when using the 'Trim or extend cross sections' tool with non-straight cross sections.
MIKE HYDRO River	External time series could not be used in expressions defining a Variable.
MIKE HYDRO River	Connecting branches on the map sometimes failed to connect to another branch and/or a cross section on a branch.
MIKE HYDRO River	The button to suspend a simulation did not actually pause the simulation.
MIKE HYDRO River	Unexpected validation errors about AD component's names were returned when defining Sediment Transport boundary conditions.
MIKE HYDRO River	An unexpected error was sometimes issued when using the tool 'Export embankment lines'.
MIKE HYDRO River	The 'Bends' value for head loss in culverts was not correctly saved, and therefore this information was lost when closing and reopening the MIKE HYDRO River project.
MIKE 1D	An error has been corrected in the exchange of water when coupling MIKE SHE and MIKE HYDRO River.
MIKE 1D	The performance of Data Assimilation simulations has been improved, in cases where many observations are present.
MIKE HYDRO Basin	When an irrigation scheme output file was loaded into the MIKE HYDRO results viewer, the names of field section result items were not all visible.
MIKE HYDRO Basin	The 'Category' attribute for water users was not correctly saved, and therefore this information was lost when closing and reopening the MIKE HYDRO Basin project.
MIKE HYDRO Basin engine	An error occurring in the application of a storage demand rule for series reservoir operation when the downstream reservoir is connected to an irrigation node has been corrected.

Release 2020

Every new release of MIKE HYDRO 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 2020 below.

New features

Module/type	New feature
MIKE HYDRO Basin	Calibration plots are now available for multiple object types, including river nodes, water user nodes, hydropower nodes, reservoir nodes and river reaches.

Fixed issues

Module/type	Error/Inconvenience
Common MIKE HYDRO features	The table of weighted rainfall time series for Rainfall-Runoff modelling is now resizable, to allow visualizing more data at once in the table.
Common MIKE HYDRO features	MIKE HYDRO sometimes closed down abruptly when loading symbology from a file.
MIKE HYDRO River	A new extended validation of chainage values for branch connections has been implemented. This helps identifying possible connection issues, e.g. resulting from edition of the start and/or end chainages of a branch.
MIKE HYDRO River	The cross section editor has been improved to automatically recompute the processed data table, after changing the resistance values or the geometry for closed rectangular or circular cross sections.
MIKE HYDRO River	The cross section editor has been improved to assign an interpolated distributed resistance value per default when adding new points to the cross section geometry, instead of a value of 0.
MIKE HYDRO River	Resistance values defined in the cross section editor and in the 'Bed resistance' menu didn't use a dynamic unit, changing with the selected resistance formula, and unit conversion was therefore not possible.
MIKE HYDRO River	Cross sections coordinates were exported with a wrong format (space missing) when exporting cross sections data to a text file, which prevented from re-importing the text file afterwards.
MIKE HYDRO River	The 'Datum' value from cross sections was ignored when drawing cross sections levels in the 'Longitudinal profile' view.
MIKE HYDRO River	Link channels using a 'Cross section DB' definition for their geometry sometimes lost the selection of the cross section used as input geometry.
MIKE HYDRO River	In the 'Control rules' menu, the tab with definition of rules has been reorganized, so that the table of rules is visible at all time.
MIKE HYDRO River	When defining cross sections for 'Bridges' structures, new rows in the cross section table were previously added at the bottom of the table. New points are now added below the active one.
MIKE HYDRO River	When markers were assigned in a cross section table for 'Bridges' structures, it was not possible to remove this marker afterwards.
MIKE HYDRO River	For 'Bridges' structures using the FHWA WSPRO method with asymmetric openings, some settings in the geometry dialog were not properly saved.
MIKE HYDRO River	New default values are proposed for the 'Integration time' and 'Derivation time' in the PID parameters, to better fit to commonly required values.
MIKE HYDRO River	Some parameters used in Data Assimilation (equation parameter and weighting function chainage) were not correctly imported from MIKE 11 model files.
MIKE HYDRO River	No validation error was provided when the definition table for a 'Storage' was empty, providing unclear errors when running a simulation. A proper validation message is now provided in MIKE HYDRO.

MIKE HYDRO River	Connections to storages were not always visible on the map
MIKE HYDRO River	'Solution method' and 'Update frequency' for water quality modelling were always reset to default values.
MIKE HYDRO River	The tool 'Export embankment lines' could sometimes not work due to unexpected chainage values and returned an unexpected error.
MIKE HYDRO River	The tool 'Auto generate cross sections' wrongly converted non-straight cross section lines to straight lines, when defining location from a shape file.
MIKE HYDRO River	The tool 'Trim or extend cross sections' could assign cross sections markers at wrong locations in some cases.
MIKE HYDRO River	When coupling to MIKE SHE, the river links were sometimes wrong.
MIKE 1D	The additional result item 'Discharge in h-points' was saved with the wrong sign for branches with negative flow direction.
MIKE 1D	An unexpected warning about negative water depth in storages was sometimes returned during simulations, when the connected river was running dry. This warning has been removed.
MIKE 1D	Wrong units for concentrations were sometimes used in result files from an Advection-Dispersion simulation.
MIKE 1D	Sediment Transport boundary conditions for a point source boundary were not applied if the boundary condition was not set to be a fractional sediment transport boundary. This is now always corrected automatically during the simulation. Additionally, the MIKE 1D engine has been improved to also support Sediment Transport boundary conditions for distributed sources.
MIKE HYDRO Basin	An unexpected validation message was provided about a missing reservoir outlet, even when an outlet was already defined.
MIKE HYDRO Basin	The option for importing irrigation data from another MIKE HYDRO Basin model file or from a template didn't work.
MIKE HYDRO Basin	The 'Load calculator' tool sometimes returned an unexpected error about output files being already in use.
MIKE HYDRO Basin	The 'Load Calculator' tool sometimes returned an unexpected error when using Alpha time series files.
MIKE HYDRO Basin	In the 'Crops' menu, the option for importing crops from another MIKE HYDRO Basin model file didn't work.
MIKE HYDRO Basin	When selecting a MIKE ECO Lab template for water quality modelling, the list of water quality parameters was sometimes incorrectly populated in MIKE HYDRO.
MIKE HYDRO Basin engine	Re-running a simulation after a first one had finished sometimes gave an unexpected error, because the first simulation was not properly completed.
MIKE HYDRO Basin engine	Simulations did not stop with a proper error message when any input time series did not cover the simulation period.

MIKE HYDRO Basin engine	A wrong increase of reservoir volume was sometimes computed due to sedimentation.
MIKE HYDRO Basin engine	When controlling programmatically the MIKE HYDRO Basin engine, the method 'ShowStatus()' did not show the relevant information for the variables.
MIKE HYDRO Basin engine	The simulation engine wrongly required that 'Flood control' time series cover one more day than the simulation period, in order to run without error.
MIKE HYDRO Basin engine	The node identifier is now saved in the item names in irrigation output time series for each irrigation node, when the irrigation module is enabled. This helps better understanding which node the time series is related to.
MIKE HYDRO Basin engine	Soil moisture and yield calculations did not continue after last day of irrigation. They now continue until the end of the crop growth cycle.
MIKE HYDRO Basin engine	The option 'Subtract area of irrigation users and reservoirs from catchment area to calculate runoff' was ignored and catchment areas were not changed when this option was active.
MIKE HYDRO Basin engine	The flexibility of the MIKE HYDRO Basin engine interface has been improved, allowing to finish a simulation controlled by a programming project, and then run another time step at a different date, remembering the initial conditions for the given time. Before this change, the engine had to be re-initialized before being able to run a time step with the same engine instance
MIKE HYDRO Basin engine	An unexpected error occurred when an irrigation user was connected to a reservoir, which was itself connected to another reservoir through a storage demand connection. The correction prevents the crash to occur, and computes the irrigation demand, so the storage demand rule considers the demand of the irrigation user when computing the storage demand assignment.
MIKE HYDRO Basin engine	When two reservoirs in series are linked by a storage demand, the storage demand flow was not routed through the downstream channel, even if the check box 'Use downstream river channel' was ticked in the storage demand tab for the lower reservoir. With this check box ticked, the reservoir now sends the storage demand through the river channel, instead of the storage demand connection.