# Release Notes 2020

# MIKE 21

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## Introduction

Welcome to MIKE 21 2020 Update 1

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 2020.

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

The recommended minimum system requirements are:

| | |
| --- | --- |
| Fully supported Windows operating systems * | Windows 10 Pro, version 1909 (64 bit)<br>Windows Server 2016 Standard (64 bit)<br>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 21 Flow Model FM utilizing GPU requires a Nvidia graphics card with compute capability 3.0 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 10.2 of the Nvidia® CUDA® Toolkit.

## Installation                                                                                                      **top**

**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 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 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 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 21 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 21 FMHD | Native support for shapefiles, and extended options for .dfs files and .xyz files. |
| MIKE 21 FMHD | It is now possible to specify bed resistance and Infiltration using shapefile polygons. There is no need to generate roughness maps. |
| MIKE 21 FMHD | New depth or flux dependent bed resistance and infiltration rates. |
| MIKE 21 MA | Full GUI support for AutoMoor mooring systems is now included in the MIKE 21 Mooring Analysis module |
| MIKE 21 ST | A new pure current model for mixed-fraction, multi-layered sediments is now available in the Sand Transport Module for the FM hydrodynamic engines. |
| MIKE 21 FMTR | It is now possible to run FM simulations with the Transport Module (Advection-Dispersion) using GPU acceleration. |
| MIKE 21 FMHD | Special treatment of important infrastructure, with the possibility to define buildings and roads via shapefile inputs. |
| MIKE 21 FMHD | New ways to handle rain on and flows around and over Buildings: <br> 1. Rain falling on buildings of a given height can now weir onto surrounding ground. <br> 2. A new building run-off factor can delay rainfall runoff from buildings – for example, dealing very simplistically with complex roof construction or green roofs. <br> 3. Rain falling on buildings can be retained in the buildings and included in the calculations (mass balance). It is possible to position a MIKE URBAN+ link in the building zone to convey all rainfall to a subsurface drainage network. |
| MIKE 21 FMHD | New ways to handle effect of raised / lowered roads (and embankments) though the specification of a ground level offset. |
| MIKE 21 FMHD | Improved performance of mass budget and discharge calculations in the GPU version. |
| MIKE 21 FMHD & MIKE 21 FMTR | Improved GPU timings information in the log file when running the hydrodynamic or transport module. |
| MIKE 21 FMHD | Line series in output from FM engines can now be specified as a polyline. |
| MIKE 21 FMHD | Discharge series in output from FM engines can now be specified as a polyline. |
| MIKE 21 FMHD | Now possible to output the bed resistance coefficient from the FM engines. |
| MIKE Zero | All MIKE Zero front-end applications (excl. MIKE HYDRO) are now optimised for 4K monitors. |

| Data Extraction FM | The Data Extraction FM tool has been extended to include the new type of outputs: <ul><li>Vertical plane series.</li><li>Line series specified as a polyline.</li><li>Discharge series specified as a polyline.</li><li>Structured output from 2D and 3D unstructured data inputs.</li></ul> |
|---|---|
| Data Viewer | Now possible to visualise the new vertical plane series .dfsu file type in the MZ Data Viewer. |
| Plot Composer | Now possible to visualise the new vertical plane series .dfsu file type in MZ Plot Composer. |
| Oil Spill Particle Track Tools | The binary particle track file format for oil spill, particle tracking and agent-based modelling (.track) is now supported as an input file format for all tools in the Oil Spill Particle Track Tools Toolbox that require a particle track file format as input. |

## Fixed issues                                                                          top

| Module/type | Error/Inconvenience |
|---|---|
| Various | Numerous corrections, stability and performance fixes. |

### Release 2020

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 short descriptions of the most significant news in Release 2020 below.

### New features

| Module/type | New feature |
|---|---|
| MIKE 21 Classic | MIKE 21/3 Oil Spill, MIKE 21/3 Particle Tracking, Non-cohesive Sediment Transport and the Generation of Sediment Tables, Extension of Sediment Tables and Sediment Discharge Calculation MIKE 21 Toolbox tools have been decommissioned and are no longer available. Support will be provided until November 2020. |
| MIKE 21 Spectral Waves FM | An extension of options for the separation of wind sea and swell in MIKE 21 SW has been implemented for better comparison with observations. |
| MIKE 21 Flow Model FM Hydrodynamics | GPU acceleration for Temperature and Salinity calculations and second order k-ε Turbulence calculations has been added. |
| MIKE 21 Mooring Analysis | We have integrated Trelleborg's AutoMoor products and technology within the MIKE 21 Mooring Analysis engine. This new functionality will provide port operators, and their consultants, with fast access to design and specification information for AutoMoor installations. |
| MIKE 21 ECO Lab FM | Google Earth (KML) output format for particle tracks in Particle Track, ABM Lab and Oil Spill modules. |
| MIKE 21 ECO Lab FM | New Flexible Mesh user examples for Oil Spill & Particle Tracking added. |

| MIKE 21 ECO Lab FM | Preview release of MIKE ECO Lab 0D engine. |
|---|---|

## Fixed issues

| Module/type | Error/Inconvenience |
|---|---|
| MIKE 21 Mooring Analysis | An error has been corrected in the Frequency Response Calculator interface where a crash can occur when grid/hull files are referenced but not present at the expected paths. |
| MIKE 21 Mooring Analysis | An error has been corrected in the Frequency Response Calculator interface where the visualisation of vessels in System View only considers (x,y) positions as integers. |
| MIKE 21 Mooring Analysis | An error has been corrected where the sequence of connecting two vessels with a line (A->B or B->A) affects the results. |
| MIKE 21 Flow Model FM Hydrodynamics | An illegal storage access error has been corrected in the free outflow boundary condition. |
| Documentation | A new example setup for the use of Long Culverts in MIKE 21 FMHD has been added. |
| Documentation | A new description of the Oil Refinery example has been added for MIKE 21 FMOS. |
| MIKE 21 Flow Model FM Transport | An error has been corrected with the correction of minimum concentrations in 2D Advection-dispersion calculations. |
| MIKE 21 Flow Model FM Shoreline Morphology | Missing example setup files for the Harbour example have been added. |
| MIKE 21 Mooring Analysis | An illegal storage access error has been corrected when checking Bollard material profiles. |