MIKE 11

river modelling unlimited

applications

MIKE 11 is synonymous with top quality river modelling covering more application areas than any other river modelling package available.

Whether your project concerns flooding, navigation, forecasting, water quality, sediment transport, or a combination of these or other aspects of river engineering, MIKE 11 handles it.

Extending the range of applications, MIKE 11 also includes options for investigating riverbank overflow and catchment hydrology .

Typical MIKE 11 applications

- Flood analysis and flood alleviation design studies
- Real time flood forecasting
- Dam break analysis
- Optimisation of reservoir and canal gate / structure operations
- Ecological and water quality assessments in rivers and wetlands
- Sediment transport and river morphology studies
- Salinity intrusion in rivers and estuaries
- Wetland restoration studies

features

MIKE 11 offers the following hydraulic and hydrological simulation engines:

HD - Hydrodynamics
DHI's classic 1D hydrodynamic engine for rivers and open channels. Unsurpassed in flexibility, robustness and features, including:

- Fully dynamic solution to the complete nonlinear St. Venant equations for open-channel flow
- Muskingu and Muskingum-Cunge routing method options for simplified channel routing
- Automatic adaptation to subcritical and supercritical flow
- A large suite of standard hydraulic structures such as weirs, culverts, bridges, pumps, energy loss and tabulated structures
- Choice of fixed, tabulated or adaptive simulation time step

Distributed hydrology

Overland flow - using a simplified, semidistributed method, or a 2D diffusive wave method. This allows you to do simplified 1D/2D flood modelling with MIKE 11.

Unsaturated infiltration - using a two-layer water balance method for infiltration losses.

Evapo-transpiration - from intercepted storage, ponded water, the root zone and groundwater.

Groundwater - using linear reservoir groundwater calculations for basin-wide water balance and river inflow calculations.

features

MIKE 11 includes a wide range of add-on modules allowing you to create your own personal river modelling toolbox.

RR - Rainfall-Runoff
Includes a variety of RR-models. Amongst these are a lumped, conceptual and continuous hydrological model as well as the standard unit hydrograph SCS method.

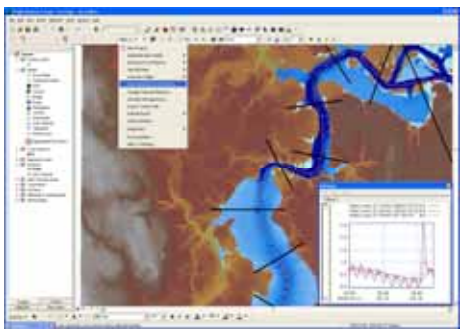
SO - Structure Operation
Simulates operational structures such as sluices, overflow and radial gates as well as pumps and reservoir releases from user-defined operating strategies.

DB - Dam Break
Provides facilities for definition of dam geometry, breach development in time and space as well as failure mode. Includes DAMBRK / FLDWAV compatibility switch.

AUTOCAL- Automatic Calibration
Automatic calibration process for a wide range of parameters, including RR parameters, Manning numbers, head loss coefficients, WQ parameters.

Stratified - Multilayered river flow
Modelling of vertical density differences, such as salinity or temperature in two-layer or multilayered stratified water bodies.

Flood mapping and results analysis



features

FF - Flood Forecasting
Modelling of real time flood forecasting including state updating and data assimilation features.

ST / GST - Noncohesive Sediment
Transport, erosion and deposition of uniform and graded noncohesive sediments, including morphological changes on river bed topography.

AD - Advection-Dispersion
Transport and spreading of conservative pollutants and constituents with linear decay (including heat).

ACS - Cohesive Sediment
Cohesive sediment with 3-layer bed description, including quasi-2D erosion.

ECO Lab - Ecological Modelling
A numerical laboratory for ecological and water quality modelling.

GIS Extension
Powerful extension for ArcGIS providing features for catchment/river delineation, cross-section and Dem data, pollution load estimates, flood visualisation/ animation as 2D maps and data/result presentation and analysis.

MIKE 11 is accepted by US Federal Emergency Management Agency (FEMA) for use in the National Flood Insurance Program (NFIP).

packages

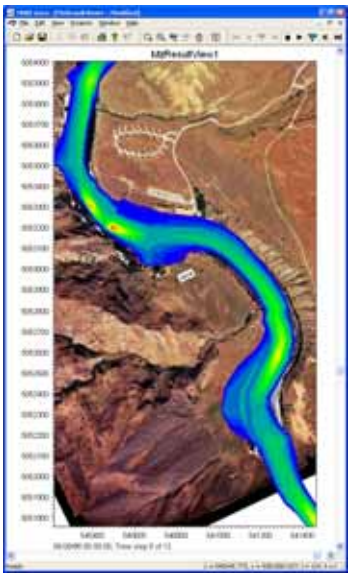
In order to make it easier to configure your MIKE 11 toolbox, two value-added packages are available:

MIKE 11 Studio
(identical with MIKE SHE Studio)
- ideal for small to medium sized river modelling applications when the HD solution is limited to 250 points with cross-sectional or structure data.
In addition, MIKE 11 Studio includes the SO and the DB modules. Furthermore, it includes distributed hydrology, previously described .

MIKE 11 Enterprise
- ideal for professionals working with detailed river modelling. It has no limits in size and detail of the HD solution and includes the SO, DB, RR, AD and AUTOCAL modules. Furthermore, it includes distributed hydrology.

These packages can be extended with other add-on modules.

2D flood map output



benefits

With MIKE 11 you get one of the world's most well-proven and commonly applied 1D river modelling packages available.

MIKE 11 is the preferred choice of professional river engineers when reliability, versatility, productivity and quality are the keywords.

MIKE 11 is a powerful river modelling toolbox with more features than any competing product.

MIKE 11 is the software product, which made 'MIKE' the brand name for top quality modelling software from DHI and remains one of the most widely used MIKE by DHI product.

OpenMI™ COMPLIANT

DHI

Agern Allé 5
DK-2970 Hørsholm
Denmark

Tel: +45 4516 9200
Fax: +45 4516 9292
software@dhigroup.com

www.dhigroup.com

ECO Lab

ecological modelling made easy

© Peter Bonde Christensen

applications

With ECO Lab you get a complete numerical laboratory for ecological modelling. You can develop exactly the model you need and describe the processes you wish to describe.

No ecological problem is too simple or too complicated for ECO Lab. Furthermore, there is no time consuming programming involved.

With ECO Lab you simply define the process using standard templates as a basis.

ECO Lab thereby lets you transform any aquatic ecosystem into a reliable numerical model for accurate predictions.

Typical applications of ECO Lab include:

- Water quality and ecological studies related to rivers, wetlands, lakes, reservoirs, estuaries, coastal waters and the sea
- Spatial predictions of any ecosystem response
- Simple and complex water quality studies
- Impact and remediation studies
- Planning and permitting studies
- Water quality forecasts

features

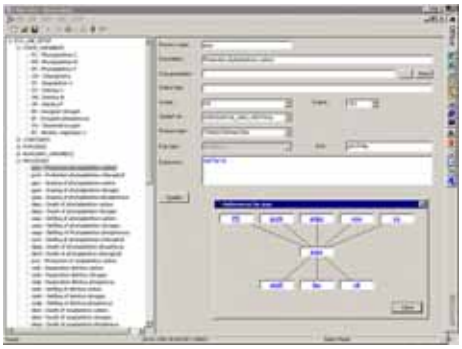
One of the preconditions of ecological modelling is an accurate flow model for the area of interest. ECO Lab integrates seamlessly with the MIKE by DHI suite of flow simulation models covering all aspects - ranging from 1D to 3D modelling:

- MIKE 11 1D
- MIKE 21 2D
- MIKE 3 3D

ECO Lab works out of the box, using predefined templates for covering standard water quality issues.

The predefined templates can be used as the basis for user defined ecosystem models.

Or you may start from a blank template making use of the wide range of libraries of constants and functions, which makes it easy to generate and edit your own templates.



ECO Lab's powerful editor for user specification of ecosystem models

benefits

ECO Lab combines the best of two worlds:

- you get access to DHI's well proven and widely used standard water quality models
- you get complete freedom to define your own know-how or research ideas and test them against your field data

ECO Lab models work across the range of 1D, 2D and 3D MIKE modelling packages. Your own templates will do that too.

Focus on the processes and forget about programming.

Exchange ideas and models with colleagues around the world. Simply send them a copy of your templates.

Agern Allé 5
DK-2970 Hørsholm
Denmark

Tel: +45 4516 9200
Fax: +45 4516 9292
software@dhigroup.com

www.dhigroup.com