MIKE 21C

River hydraulics
and morphology

MIKE 21C is one of the most comprehensive and well established tools for **simulating river bed and channel plan form development** caused by changes in the hydraulic regime. **Simulated processes include alluvial resistance, bank erosion as well as scouring and shoaling** caused by activities such as construction and dredging, and seasonal flow fluctuations.

APPLICATIONS

MIKE 21C is applied in complex river dynamics with a primary focus on sediment transport and river morphology.

TYPICAL APPLICATIONS

MIKE 21C is the ideal software for:

- Analysing flow fields and flood dynamics in rivers and adjacent floodplains
- Forecasting morphological changes in combination with planning and execution of river training works
- Reservoir sedimentation
- Designing protection schemes against bank erosion
- Evaluating measures to reduce or manage shoaling
- Analysing alignments and dimensions of navigation channels in order to minimise capital and maintenance dredging
- Predicting sedimentation of water intakes, outlets, locks and harbours
- Forecasting the impact of bridge, tunnel and pipeline crossings on river channel hydraulics and morphology
- Optimising restoration plans for habitat environment in channel floodplain systems
- Designing monitoring networks based on morphological forecasting
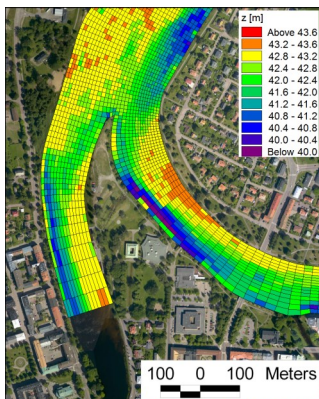
Curvilinear grid example for a river with a bifurcation (Klarälven, Sweden).

MODULES

MIKE 21C is modular with options for standalone hydrodynamics or combined hydrodynamic and sediment transport simulations.

PP - PREPROCESSING AND POSTPROCESSING

This module offers an integrated work environment, providing convenient and compatible routines to ease the task of data input, analysis and presentation of simulation results.

HD - HYDRODYNAMICS

MIKE 21C is a special module of the MIKE 21 software package based on a curvilinear grid. Flow hydrodynamics are computed over a curvilinear or rectangular computational grid by solving the vertically integrated St. Venant equations. Areas of special interest can be resolved using locally varying density of gridlines.

ST - SEDIMENT TRANSPORT

Advanced sediment transport modelling capability including mud (cohesive), sand (non-cohesive) and mixed sediments. This includes bed load and suspended sediment transport dynamics in combination with continuous update of morphological changes to the river bed.

BENEFITS

MIKE 21C is a specialised tool for the serious river morphology modeller.

It provides highly flexible, numerical solutions specifically tailored for sediment dynamics in river systems.

It encompasses mixed sediments ranging from silt and clay to sand and gravel.

MIKE 21C encapsulates DHI's collective knowledge and experience in river sediment dynamics - embedded into our technology and made available to river engineers all over the world.

FEATURES

GRID GENERATOR

Create and edit curvilinear model grids for model simulations in MIKE 21 C.

HYDRODYNAMICS

Features a large number of hydrodynamic processes required for complex sediment transport simulations.

- Curvilinear numerical grid
- Highly efficient model solver making long term simulations feasible
- Hydraulic structures and choice of dynamic or quasi-steady solutions.

ADVECTION DISPERSION

The sediment transport module includes a fully implicit advection-dispersion model.

SEDIMENT TRANSPORT

Comprehensive sediment transport module for sediment transport and river morphology dynamics, including:

- Helical flow, bank erosion, bed scour
- Sediment transport for sand and gravel
- Bed load and suspended load
- Cohesive and non-cohesive sediment models for multiple sediment fractions

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The expert in **WATER ENVIRONMENTS**

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