

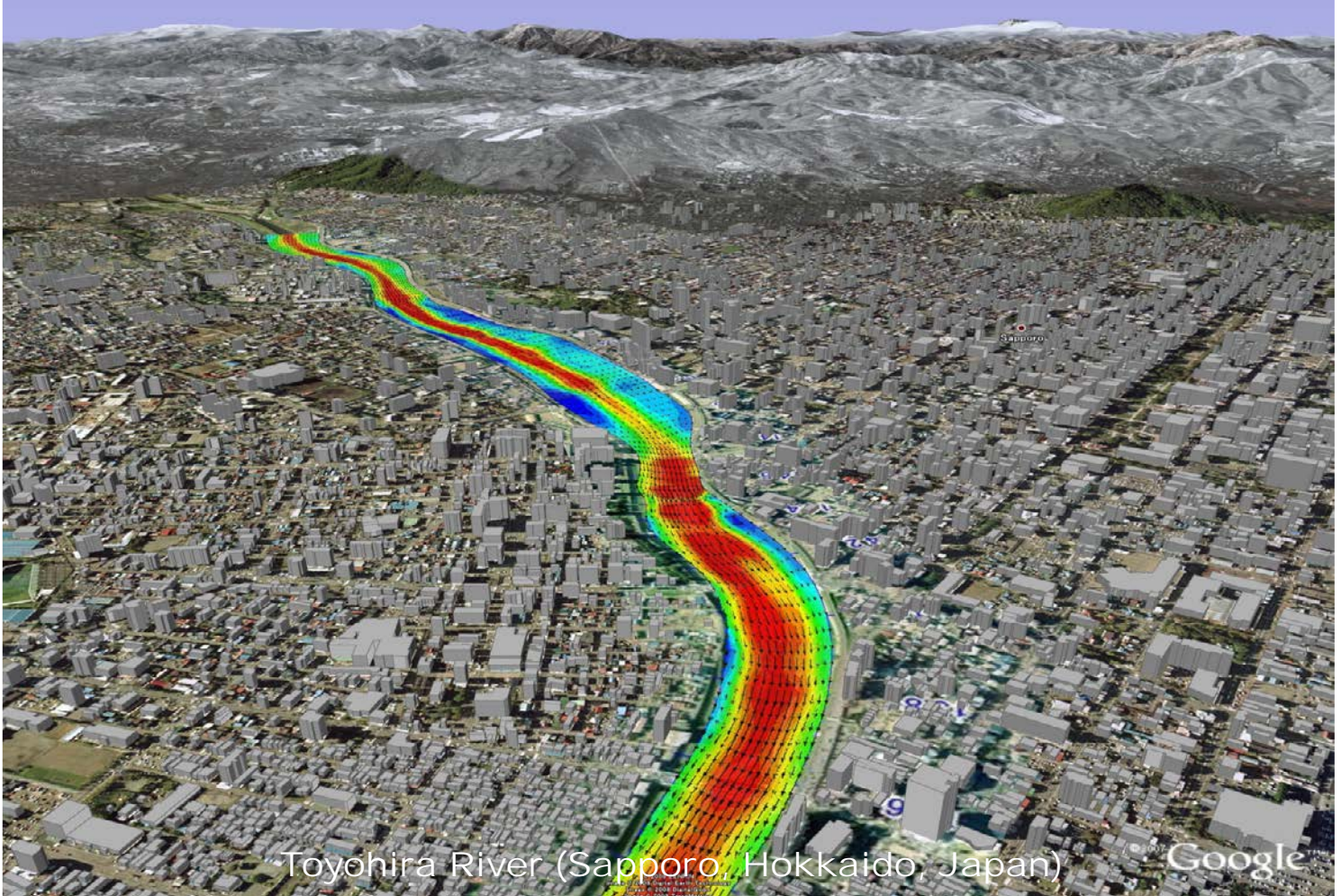


iRIC: Free Software for Flow and Bed Morphodynamics

iRIC software can simulate rivers from Colorado River to the Nile.

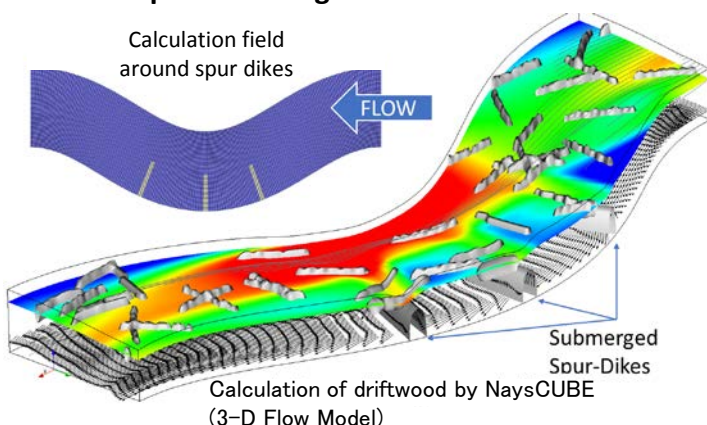
A revolution in river flow calculations, riverbed morphology, and flood analyses.

Know! Solve! See!



iRIC Software

- Included in iRIC software: runoff solver, flooding solver, tsunami solver, one, two, and three-dimensional models for flow and bed morphology calculations. **You can freely use any solver after registration.**
- Create impressive images and animations.



Current version !

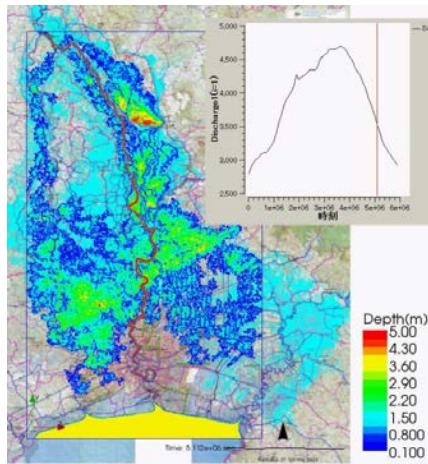
iRIC version 2.3 Released

[New features]

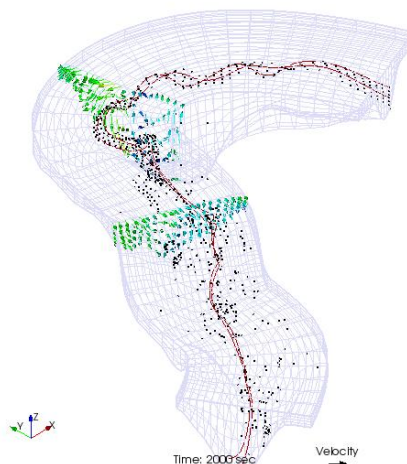
- Download background images from google map automatically
- Analyze the differences in river cross-section survey data collected at different times
- Five new solvers (for more information, please refer to the reverse side)

- iRIC can be downloaded freely. You can find the latest information about iRIC software (after user registration) <http://i-ric.org>.
- iRIC is a river flow and riverbed deformation analysis software package which combines the functionality of MD_SWMS, developed by the USGS (U.S. Geological Survey) and RIC-Nays, developed by the Foundation of Hokkaido River Disaster Prevention Research Center, Japan.

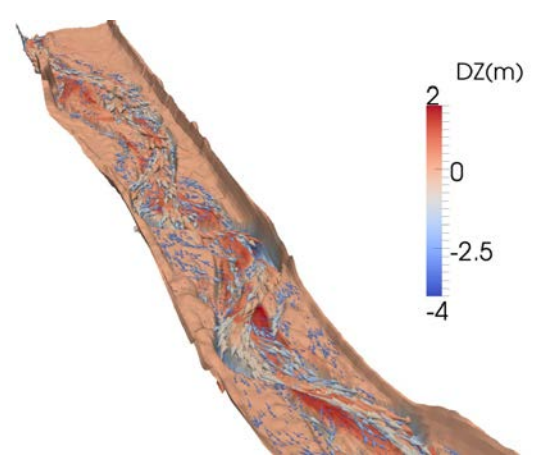
Examples of calculation results using iRIC solvers



2011 Thailand flood simulation
(Calculated by Nays2DFlood)



3D simulation for river bend
(Calculated by NaysCUBE)



Calculation for riverbed deformation
(Calculate by Nays2D, drawn by ParaView)

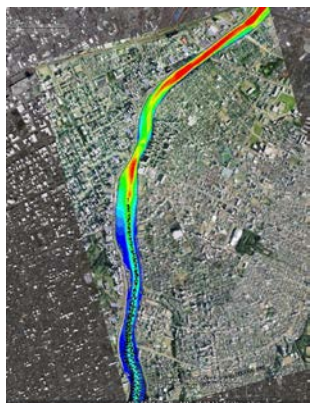
GUI Functions

< Grid generation >



- River survey and DEM data can be edited within the GUI
- Grids and meshes can be generated from river survey data and/or DEM data
- Aerial photo and map images can be set as backgrounds
- Grid attributes can be illustrated with contours and bird's-eye view

<Analysis/Visualization>



- Visualize the calculation results using contours, vectors, streamlines and particle tracks
- Save visualized image as jpg, pdf, etc.
- Export data in csv and vtk format
- Create kml files for Google Earth

<Other>

- XML Scheme:

XML scheme is used for constructing menus and specifying model parameters. This makes it simple to add new models or change existing models in the iRIC system.

- CGNS file format

The CGNS data file format is used in the iRIC system. Users can directly analyze results using software that can import CGNS files, including MATLAB, TECPLOT etc.

Solver Lineup

Newly Available

- **Nays2DH**: Nays2DH (combined Nays2D and Morpho2D) is a two-dimensional solver for flow and bed deformation. Nays2DH can simulate complex unsteady flows and bed variation including bank erosion, river confluences, mixture of sediment, suspended load transport, rigid-bed, etc.
- **SRM**: SRM is a runoff calculation solver using storage routing models.
- **Mflow_02**: Mflow_02 is a two-dimensional solver for simulating unsteady flow and riverbed morphology using unstructured grids and the finite element method. By applying unstructured grids, Mflow_02 calculates flooding including many distributaries and complex confluences.
- **NaysEddy**: NaysEddy is a three-dimensional solver based on large-eddy simulations (LES). NaysEddy is able to solve the extremely complex conditions under moving boundaries, complex bed topography, and flows with relatively high Froude numbers.
- **NaysCUBE (ver.3.0)**: NaysCUBE simulates the fully three-dimensional flow, such as the horseshoe vortices around river structures, etc., and the associated bed morphodynamics. NaysCUBE ver.3 also equips the module for simulating driftwood.

- **FaSTMECH**: FaSTMECH is a quasi-three dimensional model. FaSTMECH uses a quasi-steady assumption to calculate the flow field for long-term morphological evolution in rivers.
- **River2D**: River2D is a two-dimensional solver using finite element hydrodynamic model that has been customized for fish habitat evaluation studies.
- **Nays2DFlood**: Nays2DFlood is for flood calculation and was developed from Nays2D solver. Allows setting the overflow point of rivers, flooding discharges, and land elevations. Simulates the running or diffusing flow over land.
- **CERI1D**: CERI1D is a solver for one-dimensional (1D) unsteady flow calculations. CERI1D is capable of calculating river flow, river ice fluctuations and tsunami propagation into rivers.
- **SToRM**: SToRM is a horizontal two-dimensional finite volume flow analyzer with excellent shock capturing characteristics for dam breaks and other highly unsteady problems.
- **ELIMO**: ELIMO is a solver for tsunami calculation. It is capable of reliable estimations of Tsunami generation, propagation and evolution on coasts.

You can download iRIC Software **version 2.3**
from <http://i-ric.org/>