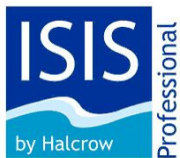


ISIS Professional

1D flood and channel modelling



Cost-effective integrated modelling solutions.

ISIS Professional is a full, one-dimensional (1D) hydrodynamic simulator for modelling water flows and levels in open channels and estuaries. It is built on an open file system enabling users to quickly and conveniently see and alter model data files and integrate custom modelling tools.

ISIS Professional allows users to carry out fast and accurate modelling of the key elements of river and channel systems enabling planners and water managers to make effective and informed decisions.

ISIS Professional includes full solution modelling of open channels, floodplains, embankments and hydraulic structures. Any hydrological method can be used and rainfall-runoff simulation enables both event based and conceptual hydrological methods.

Full interactive views of data and results are available long section and cross section, together with model build checking, advanced results reporting and analysis using tables and graphs. Integrated with ISIS Mapper, the user can work with their geo-referenced data sets for model building, results analysis and visualisation.

Key features

- uses a proven 1D flow simulation engine with an extensive range of complex structures and operating rules
- model unsteady, steady, subcritical, supercritical and transitional flows
- incorporate potentially complex logical control rules into structure operation, which makes it particularly suited to the optimisation of controlled systems
- any hydrological method can be used to provide a flow boundary; includes built-in ReFH, FEH and SCS boundary methods to make hydrological analysis easier
- incorporates ISIS Mapper, allowing the user to work with their geo-referenced data sets for model building, results analysis and visualisation
- user-friendly productivity tools, including a model health checker and results extractor and analysis.
- links to the ISIS 2D and ISIS FAST numerical engines, and other software including TUFLOW, allowing integrated one and two-dimensional (2D) modelling
- water quality and sediment transport add-on modules
- OpenMI link to allow the user to link it with any other OpenMI-compliant software
- built on an open file system so users can quickly and conveniently see and alter model data files and integrate custom modelling tools

Key applications

ISIS Professional is one of the leading software packages for river modelling. It is used extensively throughout the world for flood forecasting, flood alleviation scheme designs, flood risk mapping, flood risk assessments and catchment management planning projects.

Integrated software

ISIS Professional is OpenMI compliant, enabling it to link with other compliant software. This allows an integrated modelling approach, representing both direct rainfall and drainage systems or linking different models together dynamically.

ISIS Professional is integrated with many external software packages, including the Environment Agency's National Flood Forecasting System (England and Wales) and the Conveyance Estimation System.

Enhancements

Unlimited nodes

This allows larger models to be built within a 1D environment or one that links 1D and 2D information.

Enhanced multi-run add-on

This increases from an initial four the maximum number of concurrent simulations.

FAST solver

This allows quick assessment of flooding using simplified hydraulics. It provides results up to 1,000 times quicker when compared to traditional solvers, providing results in seconds or minutes as opposed to hours or days.

ISIS-TUFLOW link

This enables models built in ISIS Professional to be dynamically linked to TUFLOW. Existing ISIS models can easily be converted to ISIS-TUFLOW.

Network licence manager

This enables a network to share access to a licence, providing maximum flexibility to an organisation.

Water quality

This add-on is a comprehensive water quality simulator.

Sediment transport

This add-on allows you to predict sediment transport rates and patterns of erosion and deposition in channels.

ISIS Free

Use ISIS Free on your projects at no cost. It's free to download and offers an integrated 1D and 2D modelling software tool, incorporating the full features of ISIS Professional and ISIS 2D. This enables you to model smaller projects of up to 250 1D nodes and 2,500 2D cells.

The ISIS graphical user interface and ISIS Mapper are also included in ISIS Free and can be used to build hydraulic models, analyse results and visualise model outputs.

ISIS Free can be downloaded from www.halcrow.com/isis.

Delivering value – case study

■ A tool for locating new developments in low flood-risk areas

A one-dimensional ISIS model of the River Gade between Gadesbridge Park (above Queensway) and its confluence with the Grand Union Canal has enabled the flood risk for areas within Hemel Hempstead town centre to be determined.

The study was part of a level 1 strategic flood risk assessment for four councils in west Hertfordshire, covering a study area of 480km².

The main aim of a surface flood risk assessment like this is to use available information to map all forms of flood risk and use this as evidence when locating new development, primarily in low-flood-risk areas.

The flood extents for key return periods were determined and mapped. The ISIS model was then linked to TUFLOW using the ISIS-TUFLOW Link. This enabled flood extents, depths and flow velocities in the urban areas to be more accurately defined.

The outputs from these models were then used to develop appropriate flood risk management policies for the area and assign it UK flood hazard classifications.

Contact us

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