

Chris Whitlow

Director / Expert Modeller



PhD, Meng Environmental Engineering

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Professional Overview:

Chris Whitlow has unrivalled expertise in the use of ISIS, the UK standard river modelling package for which he was the main programmer and technical support contact for approximately ten years.

Since 1996 he has worked as an expert modelling sub-consultant for most of the UK's leading engineering consultancies. As well as his consultancy work, Dr Whitlow is closely involved in the UK's research effort in hydraulics and flood plain flows. He is an honorary research fellow of Birmingham and Nottingham Universities in addition to being a member of the steering group on EPSRC Flood Risk Management Research Consortium Super Work Package 1, a grouping of expert academics and practitioners interested in new research in river modelling techniques. He also been joint author on several key Environment Agency research reports such as Extension of Rating Curves at Gauging Stations using Hydraulic Models (in conjunction with HR Wallingford) and Guidelines for Application of Real-time flood forecasting models (in conjunction with WS Atkins). Dr Whitlow is also a reviewer for the ASCE Journal of Hydraulic Engineering, the ICE Journal in the UK as well as being a member of the current EPSRC College.

In recent years, he has emerged as one of the UK's leading experts in flood forecasting where he pioneered the use of hydrodynamic models in Edenvale Modelling Services' own GeoGUI Forecasting system.

He also wrote the common aspects in the ITT for the Environment Agency and was a key technical advisor for the development of the National Flood Forecasting System which has substantially shaped the present version of Deltares FEWS platform. Since then he has also written a document defining the guidelines for acceptance of ISIS and other hydrodynamic models into the NFFS.

Dr. Whitlow and Edenvale Young Associates are also acknowledged experts in both TUFLOW and ISIS/TUFLOW working closely with Bill Syme of WBM over the last 10 years, and have developed many complex models using these applications, both for breach models, mapping purposes and rating curve extension.

Within the modelling community, Chris is chair of both the ISIS and TUFLOW UK User Groups.

In October 2013, Chris gave presentation at the ISIS UK User Group in London which detailed the recent optimisation work undertaken by Edenvale Young using ISIS and other models for flood forecasting.

Profile:

Dr Chris Whitlow is a river hydrology/hydraulics expert with more than 30 years experience of mathematical modelling ranging from one, two and three dimensional modelling of water flow, quality and sediment movement/geomorphology through to atmospheric modelling, groundwater modelling and dam temperature simulation.

Qualifications:

- PhD Applied Mathematics
University of Leeds (UK).
- BSc Mathematics
University of Leeds (UK).

Career summary:

Edenvale Young Associates, Bristol (UK)

Joint Managing Director
2003 – Present

Edenvale Modelling Services (UK)

Consultant
1996 – 2003

Sir William Halcrow and Partners Ltd (UK)

Mathematical Modeller
1986 – 1996

Key project specific experience:

Development of National Flood Forecasting System (FEWS-England) – UK

Undertook the key technical adviser role in the Environment Agency National Flow Forecasting Project to procure a new national flood forecasting system, initially for Midlands, North East and Southern regions but later implemented across all eight regions. Conceived and wrote the technical specification for the Open Shell and Adapters which have been applied successfully throughout the Agency and overseas for all supported fluvial, tidal and coastal models, including multidimensional models.

FEWS Configuration

Chris and Edenvale Young Associates have more than 10 years of experience in the development and configuration of forecasting models within the FEWS platform. This work has included forecasting models for many of the largest catchments in the UK, specifically the Severn, Thames, Upper Mersey, Eden, Tay, Witham and Bristol Avon. This work included configuring many types of rainfall runoff and routing models including those developed in house by Edenvale Young using their CALIBRE optimisation software.

Probabilistic Flood Forecasting Guidelines

Was a co-author of the above Environment Agency Research and Development Report with WS Atkins, Lancaster University, CEH and Deltares.

Expert Review of Models

Chris has undertaken expert reviews of more than 100 ISIS or ISIS/TUFLOW models in the last 10 years. He is an acknowledged expert in this field. He was the architect of the Environment Agency's current three level approach to model reviews and also worked with WBM's Mark Jemsen in expert review of MIKE models for flood forecasting.

Expert Witness Experience, UK

Chris is an experienced and robust Expert Witness and has undertaken this work or supported others for a number of high profile studies in the last five years. He appeared at the Cogges Link Road (East Witney) Public Inquiry in 2011/12 where he represented the Mawle Trustees. This resulted in him spending two full days on the stand and undergoing a rigorous examination by a very experienced barrister.

ISIS Development and Technical Support, UK

Provided and co-ordinated telephone hotline support for licensees of the ISIS hydraulic modelling software. Supervised and contributed to developments in Fortran and Windows GUI code, designed to bring together Halcrow's ONDA and STYX programs with HRW SALMON_F and SALMON_Q for modelling of hydraulics and water quality respectively. Assumed principal responsibility for research and development for the ONDA (later ISIS) software, initially for UNIX workstations but later for PCs. Wrote new method (Direct Method) for solving steady state open channel networks, stabilized existing Spill mechanism, conceived the idea of English Language Rules based controls and supervised its implementation among many other program enhancements.

Training

Chris has delivered training in ISIS or ISIS/TUFLOW to Environment Agency staff and many of the UK's leading consultancies such as Royal Haskoning, JBA, Scott Wilson, Capita, Atkins, Mouchel Parkman and Hyder.

Environment Agency Flood Risk Management Modelling Strategy –

UK

Chris was the architect of the initial version of the Environment Agency Flood Risk Management Modelling Strategy which was written, to draft stage in 2006.

Thames Embayments Study (Development of ISIS/TUFLOW software)

– UK

Chris was the technical advisor to the Environment Agency for the project that first brought together ISIS and TUFLOW as a software solution to develop flood outlines for the 23 embayments of the Tidal Thames through London. This project entailed close collaboration between Chris and WBM through Bill Syme.

Development of River Tone and Parrett Mapping Models, UK

Employed via both EA framework consultants Capita Symonds and Halliburton, Brown and Root, Chris was personally responsible for the development of the original Environment Agency Tone/Parrett ISIS catchment model between Bishops Hull gauging station and Bridgwater Bay. This involved calibration outputs at EA gauging stations for the Autumn 2000 flood events on both rivers.

Extension of Rating Curves at Gauging Stations using Hydraulic Models, UK

Was the joint author of the Environment Agency Research and Development Report on the above subject with David Ramsbottom of HR Wallingford.

Real-time Modelling Guidelines

Was a co-author of the above Environment Agency Research and Development Report with WS Atkins and others.

Development of Out of Bank Rating Curve Extensions

Pioneered the use of ISIS/TUFLOW to generate accurate out of bank rating curves for several key Environment Agency gauging stations such as Sutton Courtenay, Farmoor, Temple Sowerby, Greenholme and Exebridge.

Project managed more than 200 projects since 1996.